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An empirical investigation of the economic impact of accounting standards for lease disclosure.

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AN EMPIRICAL INVESTIGATION OF THE ECONOMIC IMPACT OF ACCOUNTING STANDARDS FOR LEASE DISCLOSURE

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OF ACCOUNTING STANDARDS FOR LEASE DISCLOSURE

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DEDICATION

This dissertation is dedicated, with love, to the memory of my mother, Marian Bender Oliver, without whose emotional, moral and financial support its completion could not have been realized. Her strength, courage and faith provided a bountiful source of inspiration to me throughout the process.

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A B S T R A C T

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This study examines the economic impact of two accounting standards for lease disclosure, the SEC's ASR 147 and FASB's SFAS 13. The three empirical issues addressed are: (1) whether the accounting standards influenced firms to change their financing or leasing policies in order to mollify the reporting effects of the standards; (2) whether there was a capital market reaction associated with the standards; and (3) whether the market reactions can be explained by firm-specific economic variables.

The results presented on the first research issue suggested that firms affected by SFAS 13 may have initiated changes in financing and leasing decisions in order to mollify the apparent effects of SFAS 13. A sample of firms affected by SFAS 13 had statistically significant differences in changes in debt and leasing variables in comparison to a matched sample of firms which would not have been strongly affected

by SFAS 13. A similar hypothesis regarding firms affected by ASR 147 was not supported.

Regarding the second research issue, the tests of capital market reaction to ASR 147 and SFAS 13, in terms of abnormal price reaction, did not indicate a statistically significant difference between the experimental and control group of firms. The tests of shifts in systematic risk indicated a relatively larger number of shifts in risk for those firms affected by ASR 147 and SFAS 13 in comparison to the control samples. These results were borne out at the aggregate portfolio level of analysis for ASR 147, but not for SFAS 13.

The tests regarding the third research issue, explanations of capital market reactions associated with SFAS 13, did not support hypotheses developed from prior research and a priori reasoning as explanation of abnormal price reaction to SFAS 13. The propositions and models discussed as explanations of shifts in systematic risk, however, did provide evidence of explanatory power for risk-shifts surrounding the first exposure draft of SFAS 13. Specifically shifts in systematic risk were found to be related to changes in debt ratios and to firms' non-capitalized leases. These results further support the propositions and a priori reasoning of earlier studies.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF ILLUSTRATIONS

C H A P T E R I

INTRODUCTION AND OVERVIEW

Accounting policy decisions and associated economic consequences are an area of growing concern in accounting research. Much research has focused upon the reaction in capital markets to accounting policy decisions as one aspect of the economic consequences of those decisions. More recently, attention has been given to explaining the reaction in the capital markets in terms of underlying economic variables, and to investigating other types of economic consequences such as the effect of policy determination on the decision-making behavior of corporate management, creditors, unions and government.

It has become fairly clear in recent years that the accounting standard setting process is becoming increasingly political in nature. This has been evident in several ways. Parties outside of the accounting profession are becoming more involved in the standard-setting process. Zeff [1978] notes that as corporate management, through the lobbying process, began intervening in the standard setting process, management's arguments would be buttressed by the traditional accounting model and an apparent concern for unbiased and theoretically sound accounting procedures. Since the early 1970s, however, management has turned to a more straightforward tack and has been using economic consequences arguments in the lobbying process. Governmental bodies and agencies have also shown increasing concern during the 1970s for accounting standards and policies which foster economic behavior consistent with the nation's macro-economic

goals. [Solomons, 1978] As a result of these developments, accounting policy makers have come under increasing pressure to consider explicitly the economic consequences of their decisions.[1]

The purpose of the research presented here is to assess the economic consequences of the accounting policy decisions and authoritative pronouncements surrounding one important accounting issue, accounting for leases. Both the Securities and Exchange Commission (SEC) and the Financial Accounting Standards Board have been active in recent years in determining disclosure requirements for leases. The SEC considered the matter in Regulation S-X, and later in Accounting Series Release (ASR) 132, ASR 147 in 1973, and ASR 225 in 1977. The disclosure requirements of ASR 147 were the most extensive that had been prescribed, and were the first to mandate the disclosure of the net present value of fixed minimum lease commitments. In addition, ASR 147 required the disclosure of the effect on net income, as if the leases were capitalized, if that effect was material. These disclosures were required in the notes accompanying the financial statements in the 10-K reports filed with the SEC.

The FASB issued Statement of Financial Accounting Standards (SFAS) 13 on leases in 1976, to be effective as of January 1977. The effect was to require the actual capitalization of financing leases in the balance sheets of lessee companies. The extensive disclosures required by the SEC in ASR 147 were now mandatory in the financial statements themselves, rather than as supplementary disclosures. The most recent important authoritative pronouncement on the issue of leasing came from the SEC in the form of ASR 225 in 1977 which required retroactive compliance with SFAS 13 beginning with statements issued for fiscal years ending after December 24, 1978.

C H A P T E R II

REVIEW OF THE RELEVANT LITERATURE

In discussing the background necessary for the research proposal, several areas must be addressed. First, the evolution of the standards for lease accounting will be charted with a discussion of the various theories, ideas and pressures leading to the development of the current authoritative pronouncements. Next a discussion of capital market research will be undertaken, including consideration of the efficient market hypothesis and its implications for the current research, the various theoretical and empirical models used in capital market research, and findings of capital market studies relating to accounting issues and accounting policy decisions. Finally, the several capital market studies relating specifically to the policy decisions on lease disclosure will be reviewed.

Accounting Standards for Lease Disclosure

Leasing as a financing device did not begin to gain popularity until the 1940s. The American Institute of Accountants, the predecessor of the American Institute of Certified Public Accountants (AICPA), first dealt with the issue in 1949 with the issuance of Accounting Research Bulletin No. 38 (ARB 38). This represented the first endorsement of capitalization of leases that were "in substance, no more than an installment purchase of property." [AIA, 1949] This statement also required the disclosure of any material annual rentals and information on the period of the lease

involved. Except for restatement of this position in ARB 43 (June 1953), nothing further was published by any official body until 1962 when the AICPA published Accounting Research Study No. 4 (ARS 4).

The study, "Reporting of Leases in Financial Statements," written by Professor John H. Myers, stated that it is the right to the use of property that constitutes the asset rather than the purchase nature of the transaction. As a result he advocated the capitalization of all leases which conveyed those rights. The principal criterion specified by Myers for the conveyance of those rights was the noncancelability of the transaction. [Myers, 1962]

In response to Myers, two members of the ARS 4 project advisory committee strongly dissented. Ira A. Schur based his criticism on what he called "the theory of commitments in general and...the basic functions of the balance sheet." [FASB, 1974] Both Schur and Walter R. Staub voiced serious reservations about practical difficulties of implementation and the marginal benefits of capitalization compared to more extensive footnote disclosure.

Accounting Principles Board Opinion No. 5 followed in September 1964, and this statement did little more than reaffirm ARB 38, in that only those leases that constituted, in substance, purchases were required to be capitalized. In issuing APB Opinion 5 as such, the APB in effect rejected Myers' position that the capitalization of leases should depend upon the conveyance of property rights rather than the purchase nature of the transaction. What APB Opinion 5 did do, or attempted to do, was to clarify criteria for determining when a transaction was in substance a purchase. The Board felt that the terms of the lease should result in the

creation of a "material equity" in the leased property. A number of criteria were noted by the APB for creation of such "material equity." Among these criteria was the noncancelability of the lease which Myers had suggested as an operational definition of property rights of transfer. However, the APB also identified bargain purchase or bargain renewal options as further criteria necessary for a purchase, in substance, to have transpired. [APB, 1964]

While Opinion No. 5 did take some steps toward a clarification of lease accounting, its critics were numerous. Initial critics included three APB members whose views were included in the opinion: two qualified assents and a dissent. Walker assented to the opinion but felt the capitalization of leases that were in substance installment purchases was inappropriate because of the legal status of leases and because he believed capitalization would "inflate" the balance sheet with questionable liabilities and assets. Moonitz felt that APB Opinion No. 5 did not resolve anything concerning the nature of a lease transaction. The lone dissenter, Spacek, argued for the capitalization of all noncancelable leases, as Myers had. His arguments were that obligations under lease contracts were legitimate corporate liabilities having a claim on other corporate assets ahead of equity investors.

Research by William D. Hall noted that the strongest criticisms of APB Opinion 5 were that it did not go far enough in requiring capitalization of leases. He lent empirical support to this by noting that Opinion 5 did not result in widespread capitalization of leases. [Hall, 1967] Other critics have argued that the criteria for defining a lease that is in substance a purchase were ambiguous, difficult to apply, or lacking a

theoretical basis. Mellman and Bernstein attacked the "material equity" criterion as being both inappropriate and difficult to apply. [Mellman and Bernstein, 1966] It seemed that the board was saying that, in order for an asset to be created, legal title must exist and the asset must be paid for before its economic life was exhausted, which to some indicated an unjustified preoccupation with the asset side of the balance sheet.

In reference to the income measurement question Graham and Langenderfer felt that non-capitalization resulted in the understatement of expense and the overstatement of income in the early years of the lease and vice versa in the later years. That is, they felt the proper charge to expense should be some depreciation charge plus a declining annual interest charge rather than the level rental charge under a lease. [Graham and Langenderfer, 1965]

The next major development in lease accounting, chronologically, was APB Opinion No. 7, "Accounting for Leases in Financial Statements of Lessors," which defined two methods of lease accounting for lessors: the financing method and the operating method. The financing method was to be used for leases which pass on to the lessee most of the "risks and rewards" of ownership, while the operating method was considered appropriate when the lessor retained most of those "risks and rewards" of ownership. While the objective of Opinion No. 5 was to define appropriate criteria for capitalization, Opinion No. 7 considered the major problem of lease accounting by lessors to be the allocation of revenue and expense to accounting periods in order to fairly state the lessor's net income. As a result a "financing lease" was to be treated in a method analogous to that used by lending institutions for level repayment plans on secured

loans. With operating leases, the payments were to be recognized as revenue throughout the life of the lease and any appropriate expense such as depreciation or maintenance was to be recognized as well.

The major critics of APB Opinion 7 complained of its inconsistency with APB Opinion 5. One in particular, Gerald Alvin, noted that, based on the criteria in respective pronouncements, a lessee could quite easily be treating a lease as being in substance a purchase while on the other hand the lessor might be treating the same transaction as not being a sale. Clearly, from a theoretical standpoint, it is difficult to justify a single transaction being a purchase by one party yet not a sale by the other. [Alvin, 1970] The APB recognized the inconsistency yet did not consider it a serious flaw because they felt the two pronouncements had different objectives. That is, APB No. 7 stressed allocation of revenues and expenses by lessors as being critical and APB No. 5 had the major focus of capitalization or non-capitalization of leases. The numerous critics of the two opinions were divided on which was in need of revision. Some felt APB Opinion 5 needed amendment to conform to Opinion 7, others felt the opposite was true, and still others believed that neither opinion was satisfactory. The APB itself acknowledged in Opinion 7 that the lease accounting issue was unresolved and further consideration would be given to it.

Subsequent APB action included a section in Opinion No. 10 (an omnibus opinion) on accounting for lease transactions between related parties (December 1966), and an interpretation of Opinion No. 7 in November 1971 which was intended to clarify criteria for transferring "risks and rewards" of ownership to a lessee from a manufacturer/dealer lessor.

In addition to the AICPA, the other official body active in determining disclosure requirements has been the Securities and Exchange Commission (SEC). In Regulation S-X, since superceded by Accounting Series Release No. 147--ASR 147, and ASR 225, the SEC mandated significant footnote disclosures, including minimum annual rentals for five years. ASR 132, "Reporting of Leases in Financial Statements," (November 1972) provided an interpretation of APB Opinion 5 in that a transaction wherein the lessor has no independent economic substance should be accounted for as a purchase by the lessee. Also, in February 1973, ASR 141 was released as a clarification of Regulation S-X.

In January 1973, the APB released an exposure draft of a proposed opinion on lease accounting, but dropped the matter in April 1973 in deference to the FASB. In June 1973, the SEC released its major pronouncement on lease accounting: ASR 147, "Amendment to Regulation S-X Requiring Improved Disclosure of Leases." The new disclosure requirements were quite significant. It required disclosure of:

1) total rental expense, reduced by rentals from subleases, that entered into the determiniation of results of operations, also to include separate disclosure of rentals on non-capitalized financing leases;

2) minimum rental commitments under all noncancelable leases, with separate disclosure of the amounts applicable to non-capitalized financing leases;

3) the present value of the minimum lease commitment discounted at the rate of interest implicit in the lease for all non-capitalized financing leases;

4) the impact upon net income, for each period an income statement

is presented, as if all non-capitalized financing leases had been capitalized; and

5) any restrictions on dividends, further debt, further leasing or any other information necessary to assess the effect of lease commitments upon the financial position, results of operations and changes in financial position of the lessee.

In addition the SEC defined a financing lease as "...a lease which, during the noncancelable lease period, either (i) covers 75% or more of the economic life of the property or (ii) has terms which assure the lessor of a full recovery of the fair market value, which would normally be represented by his investment, of the property at the inception of the lease plus a reasonable return on the use of the assets, subject only to limited risk in the realization of the residual interest in the property and the credit risks generally associated with secured loans." [FASB, 1974]

The APB, in a reversal of its April decision, had put leasing back on its agenda prior to the SEC's ASR 147 being released, and on June 30, 1973, they released Opinion No. 31, "Disclosure of Lease Commitments by Lessees." In doing so, the Board indicated that some investors, credit grantors and rating services had stated that disclosures under APB 5 were not always adequate in providing relevant information.

The FASB notes, however, that APB No. 31's disclosure requirements were less extensive than the SEC had mandated in ASR 147. It was in fact ASR 147 which laid much of the foundation for SFAS 13. In ASR 147 the disclosure of the present values of net fixed minimum lease commitments was made mandatory, while in APB 31, such disclosures were optional. ASR 147 requires the disclosure of the impact on net income as if finan-

cing leases had been capitalized; APB 31 does not. Additionally, the SEC required that any contractual arrangement having the economic substance of a lease must be considered a lease for ASR 147's purposes, whereas the APB made no such provision.

These are the important historical antecedents to SFAS 13. The development of SFAS 13 even after the release of ASR 147 was slow. The FASB deliberated over two years after the addition of lease accounting to its agenda before the issuance of the first exposure draft (August 1975) on the subject. After that, another eleven months elapsed before the July 1976 exposure draft which eventually became SFAS 13.

The most significant aspect of SFAS 13 was to require the capitalization of leases meeting any of four very specific criteria:

1) the lease transfers ownership of the property to the lessee by the end of the lease term;

2) the lease contains a bargain purchase option, a provision allowing the lessee, at his option, to purchase the leased property for a price lower than the expected fair value of the property at the date the option becomes exercisable, with the expected fair value to be determined at the inception of the lease;

3) the term of lease, fixed noncancelable term, is equal to seventy-five percent or more of the estimated economic life of the asset; or

4) the present value of the minimum lease payments is 90 percent or more of the fair value of the property to the lessor, fair value being defined essentially as the fair market value as of the inception of the lease.

Neither of the latter two criteria are applicable when the term of the

lease begins within the last 25 percent of the leased asset's total economic life. Leases meeting any one of the above requirements must be capitalized. The capitalized value of the lease is the present value of the minimum lease payments discounted at the lessee's incremental cost of debt, unless the implicit rate of the lease is less than that and is known to the lessee. This value is capitalized as an asset and a liability, unless this exceeds the fair value of the asset, in which case that is capitalized.

The capitalized asset is then amortized in accordance with the firm's normal depreciation policies for assets of that kind over a period of the life of the lease, or the life of the asset if ownership is transferred or the lease contains a bargain purchase option. Other disclosures include:

1) the gross amount of assets capitalized by major functional classes;

2) the future minimum lease payments in aggregate and for each of the five succeeding fiscal years;

3) the total minimum sublease rentals receivable under noncancelable subleases;

4) total contingent rentals paid during the period.

Those leases not meeting any of the criteria for capital leases are considered operating leases and disclosure for these includes:

1) rental expense for the period;

2) future minimum rental payments in aggregate and for each of the five succeeding years;

3) total minimum sublease rentals receivable for leases exceeding one year.

All lessees are required to give a general description of the leasing arrangements as well.

Accounting for lessors is generally symmetric with lessee accounting. In general leases meeting any of the above criteria for capitalization are considered either direct financing or sales-type leases. These leases must, however, meet two additional criteria:

1) collection must be reasonably predictable;

2) no important uncertainties must exist about unreimbursable costs the lessor has yet to incur.

If both of the latter conditions and at least one of the former are not met, then the lease is an operating lease.

The FASB statement went into effect as of January 1977 and required all leases entered into after January 1, 1977 to be accounted for under FASB 13. A lagged transition period was allowed for leases entered into prior to January 1, 1977 with all leases requiring retroactive application of FASB by December 24, 1981.

While SFAS is the current major pronouncement from the FASB on leasing, it has been subject to numerous amendments and interpretations because of its complexity. Amendments include:

1) SFAS 17--Accounting for Leases Initial Direct Costs;

2) SFAS 22--Changes in the Provisions of Lease Agreements Resulting from Refundings of Tax-Exempt Debt;

3) SFAS 23--Inception of the Lease;

4) SFAS 26--Profit Recognition on Sales-Type Leases of Real Estate;

5) SFAS 27--Classification of Renewals or Extensions of Existing Sales-Type or Direct Financing Leases;

6) SFAS 28--Accounting for Sales with Leasebacks; and

7) SFAS 29--Determining Contingent Rentals.

Numerous FASB interpretations (nos. 19, 21, 23, 24, 25, and 27) have been fostered by SFAS 13 as well. Although the extraordinary complexity of the issue as well as the pronouncement has led to the proliferation of FASB amendments and interpretations, the major thrust of the initial FASB pronouncement of SFAS 13 remains unchanged: the requirement of capitalization of leased assets and the definitions of specific criteria for determining those leases to be capitalized.

The most recent authoritative pronouncement on the lease issue was the SEC's ASR 225 issued on August 31, 1977. The substance of the SEC's statement was 1) to bring its financial statement disclosure requirements into line with SFAS 13, 2) to require retroactive compliance with SFAS 13 beginning with statements for years ending after December 24, 1978, essentially eliminating the FASB's long transition period, and 3) to delineate disclosures to be made by those enterprise lessees subject to rate regulation which do not captialize leases as indicated by SFAS 13.

The development of lease accounting standards exemplifies the dynamic and political nature of the determination of accounting policy. While it seems unlikely that SFAS 13 and its amendments and ASR 225 will be the final word on lease accounting,[2] they represent the fruition of a long debate and lobbying process, and stand as the most important policy decisions on the lease accounting issue. In addition, because of the magnitude of interest in this issue from the financial community, the accounting profession and corporate management as well, it affords a fertile opportunity to study the economic impact of a particular accounting policy decision.

Capital Market Theory and Research on Accounting Policy Decisions

Much recent research in accounting has been concerned with accounting policy decisions. A substantial portion of that has used the capital market research framework as its analytical tool. There exists in the literature a number of studies in the capital market area which pertain to the research problems being considered here. Before undertaking a discussion of those studies, a thorough consideration of the various theories supporting research of this type is necessary. This section will discuss the theories and applications of the efficient market hypothesis (EMH), the capital asset pricing model (CAPM) and the market model. The implications of these for research in accounting, and in particular research on accounting policy decisions will then be reviewed.

Market Efficiency

Market efficiency as discussed in the accounting and finance literature refers to informational efficiency of the capital market. That is, an efficient capital market is one in which the prices of capital assets fully reflect all of the relevant available information. Efficient capital markets imply capital assets prices which allocationally are efficient, meaning the prices are determined so as to equate marginal rates of return to all producers and savers and hence, the scarce savings are optimally allocated to productive investments such that society as a whole benefits. Efficient capital markets may also imply operational efficiency if the intermediaries who provide the service of transferring funds from savers to investors [in physical assets] do this at the lowest

cost which allows them a fair return for the services they provide. [Copeland and Weston, 1979]

Eugene Fama [1970, 1976] deserves much of the credit for operationalizing the concept of capital market efficiency. He identifies three forms or levels of market efficiency which differ in reference to what information is relevant or available and, therefore, reflected in the prices of assets. These three levels are: 1) weak market efficiency, 2) semi-strong market efficiency, and 3) strong market efficiency.

Weak market efficiency means that any information contained in the historical price sequence or return sequence is already fully reflected in the current price of the asset. Investors cannot use the information available in these sequences to earn an abnormally high return; that is, investors cannot use this information to "beat the market." Semi-strong market efficiency goes beyond that in that it implies that all publicly available information is fully reflected in the current price of the asset. Publicly available information would include the accounting data available in the companies' annual reports as well as earnings reports from the financial press and the various public investment advisory data available in the Wall Street Journal or Barron's. Strong market efficiency means that all information, public or private (inside the company), is reflected in the current price of the asset.

The empirical evidence is voluminous on the former two levels of the EMH and somewhat sparse on the latter. It is the semi-strong form of the EMH which has the most relevance for accounting research and for the research problem at hand. The important empirical work on all three levels of the EMH will be discussed; however, special emphasis will be given to

the semi-strong form of EMH.

Much of the early empirical work on efficient markets centered around tests of various times series behavior patterns of security prices and returns. The three commonly used models are 1) the fair game model, 2) the martingale or submartingale model, and 3) the random walk model. A fair game is a process in which, on average with a large number of samples, the expected return on an asset is equal to the actual return. A martingale is a process in which the expectation of the next period's price is equal to the current price; a submartingale is a process in which the expectation of the next period's price is greater than the current price. Both the martingale and submartingale processes are also fair games. Finally, a random walk means that there is no difference between the distribution of returns conditional on a given information set and the unconditional returns. In other words, all the parameters of the distribution of returns must be stationary over time. The early empirical studies on weak capital market efficiency, such as by Fama [1965] and others indicates that the stock market does not follow a strict random walk model. Filter tests by Alexander [1961] and Fama and Blume [1970] do indicate, however, that the fair game and submartingale models are not inconsistent with empirical evidence. The evidence cited above as well as a myriad of other studies suggest that capital markets are, at a minimum, efficient in the weak sense. Security prices were found to conform to the fair game and submartingale models although not to a strict random walk model because of slight first order dependencies in prices and because of nonstationalities in the underlying price distribution over time.

The semi-strong form of the EMH, because of its focus on public information of all kinds has led to empirical work using accounting information. The semi-strong EMH implies that all publicly available information is rapidly impounded into the security price. Financial accounting information is, of course, part of the publicly available information set. Empirical tests of this form of the EMH include tests of information effects of various types of accounting announcements: earnings announcements, accounting changes, mandatory or discretionary and cosmetic or substantive. Ball and Brown [1968] found that information contained in annual earnings announcements is fully reflected in stock prices within a few days. Ball and Brown's work is also important because of the methodological breakthrough, the introduction of the abnormal price index (API), which will be discussed later. Other empirical work on the semi-strong EMH tests the impounding of other public, but non-accounting information--stock splits, dividend announcements, new stock issues, and large secondary offerings. One landmark study of this type was the Fama, Fisher, Jensen and Roll [1969] study which found that information contained in stock splits regarding a firm's future dividend prospects is fully reflected on average at the time of the split. Scholes [1969] found similar results for new issues and large secondary offerings. The Fama, Fisher, Jensen and Roll study also introduced an important new methodology, the cumulative average residual (CAR) analysis, which will be discussed further in a subsequent section.

The strong form of the EMH is largely unsupported. Corporate insiders and specialists on the stock exchange are the only groups whose access to inside information is documented. Neiderhoffer and Osbourne [1969] found that specialists use knowledge about unfilled limit orders

to generate monopoly profits ans Scholes [1969] found that corporate insiders have valuable non-public information about their own firms. Althoguh Jensen's [1968, 1969] studies of mutual fund managers do not indicate any systematic superiority of performance, compared with the market in general, it is not clear that mutual fund managers do indeed have a monopolistic access to superior information. Hence, this evidence cannot be interpreted as supporting the strong form EMH.

The evidence of capital market efficiency may be summarized as follows: 1) overwhelmingly supportive of weak market efficiency, 2) highly supportive of semi-strong efficiency, and 3) non-supportive of strong market efficiency. As a result the research to be presented in this study will assume that markets are efficient at least in the semi-strong form. The assumption of strong market efficiency is unnecessary to conduct this research.

Empirical and Theoretical Models

Most of the capital market studies done in accounting have had as their basis one of two important models: 1) the Capital Asset Pricing Model (CAPM) or, 2) the Market Model.

The CAPM grew out of the portfolio theory work by Markowitz [1952, 1959]. It was developed by Sharpe [1963, 1964] and Treynor [1961] and later refined by Lintner [1965], Mossin [1966] and Black [1972]. The CAPM may be stated:

$$E(\tilde{R}_i) = R_f + [E(\tilde{R}_m) - R_f]\,[\sigma_{im}/\sigma^2_m] \qquad (1)$$

where:

$E(\tilde{R}_i) \equiv$ the expected return on the asset;

$R_f \equiv$ the "risk-free" rate of return;

$E(\tilde{R}_m) \equiv$ the expected return on the market portfolio;

$\sigma^2_m \equiv$ the variance of the return on the market portfolio;

$\sigma_{im} \equiv$ the covariance of the market portfolio with asset i.

This is the Sharpe's and Treynor's CAPM. In words, the model implies that the required rate of return on any asset i is equal to the risk-free rate of return plus a risk premium. The price of risk is:

$$E(\tilde{R}_m) - R_f$$

The quantity of risk is σ_m/σ^2_m, often denoted as β_i. The assumptions upon which the CAPM is based are:

1) investors are risk averse;

2) investors are price takers and have homogenous expectations about asset returns which follow a joint normal distribution;

3) there is a risk-free asset and unlimited lending and borrowing at that risk-free rate;

4) all assets are fixed in quantity, marketable and perfectly divisible;

5) there are frictionless capital markets and information is cost-less;

6) there are no market imperfections such as limitations on short selling or taxes.

While the assumptions are restrictive, the model has been shown to be robust to the relaxation of certain assumptions. For instance Black [1972] showed that the proof of the CAPM does not depend on the existence of a risk-free asset, only a "zero beta" portfolio having no covariance with the market.

The "market model," a second important model for capital market research, unlike the CAPM, does not rely on any particular theory. The

market model simply specifies that the return on any security i is a linear function of the return on a market portfolio of securities:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (2)$$

where:

R_{it} the return on the i^{th} security in period t;

R_{mt} the return on the market portfolio in period t;

α_i, β_i parameters of the model; and

ε_{it} is a random disturbance.

Usually, the return on a security is:

$$R_{it} = \frac{(P_{i,\,t+1} - P_{it}) + D_{it}}{P_{it}} \qquad (3)$$

with:

P_{it} price of security i in period t; and

D_{it} dividend on security i in period t.

The market model was developed by Sharpe [1963], although first suggested by the work of Markowitz [1952, 1959]. Fama [1970] has taken the one period CAPM, given it a multiperiod interpretation and shown its equivalence to the market model. He noted that:

$$E[\tilde{R}_i] = R_f - \beta_i R_f + \beta_i E(\tilde{R}_m)$$

and if $R_f - \beta_i R_f = (1 - \beta_i)R_f$ is defined as α; then $E(\tilde{R}_i) = \alpha_i + \beta_i E(\tilde{R}_m)$ which is the market model, in ex ante form. The two are equivalent if 1) the risk-free rate is stationary across time, the distributions of R_{it} and R_{mt} are stable across time and R_{mt} can be well approximated by some market index.

Tests of the market model have been done by Blume [1968] and Fama, Fisher, Jensen and Roll [1969] and the evidence suggests that it is well specified as a linear regression model in that:

1) α and β estimates appear to be relatively stable over time;

2) estimates of ε_i appear to be serially uncorrelated over time; and

3) estimates of ε_{it} appear to be contemporaneously uncorrelated with R_{mt}.

The empirical work on the CAPM, on the other hand, as reported by Blume and Friend [1970, 1973], Fama and MacBeth [1973] and Black, Jensen and Scholes [1972], in general, found that factors other than β_i (e.g., β^2_i and unsystematic risk) were not significant in explaining returns cross-sectionally. However, tests of:

$$(R_i - R_f) = \hat{\delta}_0 + \hat{\delta}_1 \beta_i \qquad (4)$$

did not find $\hat{\delta}_0 = 0$ as the model would predict, nor did they find $\hat{\delta}_1 = R_m - R_f$ as the model would predict.

Capital Market Research and Accounting Information

A number of the studies addressing the issue of market efficiency with relation to accounting information have already been discussed as the evidence on market efficiency in the semi-strong form became increasingly convincing, attention turned away from tests of market efficiency and toward tests of the information content of accounting disclosures. More specifically, studies have often considered differential market reactions to different information disclosures. These include:

1) Application of different generally accepted accounting principles across firms;

3) changes in accounting methods or techniques; a) discretionary: (1) substantive, and (2) cosmetic; b) mandatory: (1) substantive, and (2) cosmetic.

The Ball and Brown [1968] and Fama, Fisher, Jensen, and Roll [1969] studies are important for many reasons, but are cited here for methodological reasons. Ball and Brown introduced the idea of an abnormal performance index (API) and FFJR introduced the residual or cumulative average residual (CAR) technique.

Both the API and the CAR are based on the market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (2)$$

where:

R_{it} = the return on the i^{th} security in period t;

R_{mt} = the return on the market portfolio in period t;

α, β are parameters of the model;

ε_{it} is the random disturbance term for period t.

The parameters are estimated α_i and β_i and a predicted return R_{it} is derived. Then a residual $\hat{\varepsilon}_{it}$ is calculated:

$$\hat{\varepsilon}_{it} = R_{it} - \hat{R}_{it}$$

Ball and Brown's API is $API_i = \prod_{t=1}^{T} \sum_{i=1}^{N} (1 + \hat{\varepsilon}_{it})$

N is the number of firms in a particular portfolio or subsample;

T is the number of time periods used.

FFJR's CAR is:

$$CAR_j = \sum_{t=1}^{T} 1/N \sum_{j=1}^{N} \varepsilon_{jt} \qquad (5)$$

N and T as above.

Much subsequent research has used one methodology or the other with some variation.

Hong, Kaplan, and Mandelker [1978] studied the application of pooling as opposed to purchase methods of accounting for business combinations.

They used the FFJR CAR methodology and were unable to find evidence of differential reaction in the capital market as long as cash flows were unaffected. The latter consideration is one that has arisen in many studies of changes in accounting methods or techniques, the second type of information content study listed above, as differentiating substantive from cosmetic changes in accounting technique. As background to this study, the ideas of substance and form need further discussion. The issue has received renewed attention recently in a somewhat broader context. [Foster, 1980]

In the accounting literature during most of the 1970s, a substantive accounting change has been defined as one in which the cash flows of the firm are affected by the change in accounting method in some way. Thus the immediate cash flow of the firm as well as the expected future cash flows of the firm are modified in some way.

A cosmetic accounting change is simply a change which may affect the reported accounting variables such as accounting net income, total assets, debt or equity, but has no real economic effect such as modifying cash flows. For this study, substantive and cosmetic accounting changes will be defined more broadly. A substantive change in accounting technique is defined as any change which affects or changes the information set available to the market. This would possibly have an impact upon the expected return on distribution of returns on a security. This would include, but not be limited to, accounting changes which affect taxable income and, therefore, cash flows and expected cash flows. This is commonly presented in the literature as the main example of a substantive accounting change; however, Watts and Zimmerman [1978] identified a number of factors that

could lead to changes in cash flows even if no tax considerations are involved. These include increased political costs such as lobbying costs and labor-related costs, increased regulatory costs if the firm is in a regulated industry, and increased information production costs. Finally, it is possible, under the broader definition of a substantive change, to include those accounting method changes which reveal to the market new information about the business or financial risk of a firm which in turn affects the market risk of the firm's common equity.[3]

The preceding discussion has focused on substantive accounting changes. Two types were identified: 1) those affecting cash flows in some way, through taxes or otherwise, and 2) those revealing new information to the market without directly affecting cash flows. These will be referred to henceforth as "impact substantive" and "informational substantive" accounting changes. Those accounting changes which neither have a cash flow impact nor reveal new information to the market will be considered cosmetic. In addition to the substantive-cosmetic categorization, accounting changes may also be classified by the source of the change--corporate management or some policy-making body such as the APB, FASB or SEC. Management-initiated changes will be referred to as "discretionary" and those required by some authoritative body will be called "mandatory." Studies of accounting changes may be classified using these two levels of categorization. Table I presents the two-way classification with examples of each type of study, which will be discussed.

TABLE 1

Studies of Types of Accounting Changes

Source	Effect: Cosmetic	Effect: Substantive
Discretionary (Management)	Kaplan and Roll [1972] (Investment Tax Credit, depreciation switchback)	Sunder [1973, 1975] (FIFO vs. LIFO inventory changes)
Mandatory (authoritative body)	Lev [1979]; Dyckman and Smith [1979]; Collins and Dent [1979] (Proposed SFAS 19, Oil and Gas)	Simonds and Collins [1978] (SEC Line of Business disclosures)

Sunder [1973, 1975] studied firms switching from FIFO to LIFO accounting for inventory and firms switching from LIFO to FIFO accounting for inventory. Since FIFO to LIFO switches have positive tax effects and LIFO to FIFO switches have negative tax effects during inflationary periods, he hypothesized a positive reaction to the former and a negative reaction to the latter. Using the FFJR CAR technique, he found results consistent with his hypothesis.

Kaplan and Roll [1972] studied firms making one of two changes that had no effect on taxes or cash flows: (a) switching from deferral of the Investment Tax Credit (ITC) to the "flow-through" method, recognizing the benefit of the ITC in the year of investment, or (b) switchbacks to straight-line depreciation from accelerated depreciation for financial reporting but not for tax purposes. For the first type of change they found a small but probably insignificant market reaction, in spite of a positive effect on earnings per share (EPS). The results from the second

type of change, they felt, were attributed to a pre-selection bias.

Simonds and Collins [1979] studied a mandatory, substantive accounting disclosure requirement change, the requirement by the SEC that firms disclose line of business information. After specifying theoretical reasons for possible shifts in systematic risk of securities, they tested the hypothesis that the systematic risk of the securities did indeed shift and found significant changes in beta for portfolios of securities affected by the change.

Finally, a number of studies [Lev, 1979; Dyckman and Smith, 1979; and Collins and Dent, 1979] were made of the market impact of SFAS 19 on accounting in the oil and gas extractive industries. The proposed statement eliminated "full cost" accounting in favor of "successful efforts," and was apparently cosmetic. Although the FASB subsequently rescinded SFAS 19, some researchers did address the issue of the market impact of the proposed change in accounting requirements with regard to oil and gas extraction. Although results conflict among the studies, several authors found a significant market reaction to the proposed change. Since the change was apparently cosmetic, this result was controversial. A subsequent study by Collins, Rozeff, and Dhaliwal [1980] addressed the question of explaining this reaction cross-sectionally. Using a cross-sectional model they were able to explain this abnormal reaction in terms of underlying economic variables.

Another important area of research in this category addresses the association between accounting data and systematic risk of common stocks as measured by beta. Until recently, however, much of the work has been what Lev [1974a] described as "fishing expeditions"; that is, correlational

studies lacking theoretical bases. A number of more recent studies have developed a theoretical framework for the association of market-determined and accounting determined risk. Studies of both types will be reviewed in this section.

One of the initial studies in the area was that done by Ball and Brown [1969], who used correlational analysis to test the relationship between two covariability measures:

1) the covariability between a security's return and the market return; and

2) the covariability between the accounting income of the individual firm and an economy-wide index of accounting income.

Their data indicated that there was a significant relationship between the systematic variability of accounting income numbers and market returns. Another study, by Beaver, Kettler and Scholes [1970], presented evidence supporting the hypothesis that accounting measures of risk are impounded in the market-price based risk measures. Beta coefficients were empirically shown to be associated with a number of factors including, among others, financial leverage and earnings variability, two factors affected by capitalization of leased assets. Beaver, Kettler and Scholes also suggest areas of further research including examination of whether investors do react directly to accounting information. In a later study, Beaver and Manegold [1975] found a statistically significant association between market betas and accounting betas. A study by Wichern and Haugen [1975] also indicated a relationship between leverage and the stability of stock prices. Ben-Zion and Shalit [1975] found that leverage as well as size and dividend record were important determinants of equity risk. Melicher [1974] found that, in addition to betas being significantly and positively

related to market activity of the common stock, as financial leverage increased, the impact on risk as denoted by estimated betas occurred at an increasing rather than a constant rate.

A study by Ball [1972] dealt with market activity surrounding a number of types of accounting changes. He found that, while there was no indication of abnormal returns in the months around the changes, there were changes in the risk characteristics for firms in his sample. Bildersee [1975] cites further evidence of an association between beta coefficients and several traditional measures of asset composition and leverage. Additional studies by Gonedes [1973] and Breen and Lerner [1973] found similar results.

Recent evidence reported by Elgers [1980] disputes some earlier findings of the superiority of the inclusion of accounting-based risk measures in models predicting systematic risk of equity securities. Elgers found that accounting risk measures did not improve upon market-based systematic risk predictions. Earlier results are reinterpreted as resulting from statistical problems in the methodology.

As a whole, the evidence is impressive in support of at least the contemporaneous association between accounting information and market-determined risk measures. Until recently, however, little attention had been given to a theoretical justification for this association. Several authors have considered this recently. Lev [1974b] demonstrated a theoretical relationship between operating leverage and risk. Hamada [1972] developed a theoretical argument for the association of leverage as a risk measure with market risk. This relationship is implicit in the Miller and Modigliani (MM) capital structure hypothesis; that is, the market-related measures of systematic risk of firms in a given risk class should

vary iwth their capital structures. Hamada empirically tested this relationship and concludes "if the MM corporate leverage proposals are correct, then approximately 21 to 24 percent of observed systematic risk of common stocks, when averaged over 304 firms, can be explained merely by the added financial risk taken on by the underlying firm with its use of debt and preferred stock. Corporate leverage does count considerably." In a more recent paper, Bowman [1978] developed a theoretical model that demonstrated financial leverage and its relationship to systematic risk. In addition, under somewhat restrictive assumptions, it was shown that systematic risk is not a function of earnings variability, growth, firm size or dividend policy. Although developed in a different manner, the theoretical model developed by Bowman is consistent with Hamada's argument.

Empirical Research n the Issue of Leasing

The empirical work on the issue of accounting for leases has been relatively sparse, at least until recently. Studies have typically addressed the question of whether different methods of accounting for leases, or changes in the method of accounting for leases has had any substantial effect on either stock prices or systematic common stock risk.

Ro [1978] investigated the information content of accounting lease disclosures mandated by the SEC in ASR 147. He found that capitalized lease disclosures, as mandated by ASR 147, did significantly affect the distribution of security returns. In addition, he found that firms disclosing both a balance sheet and income effect of capitalizing leased assets, and that high beta firms were more affected than low beta firms.

Ro did not consider the effect of the disclosure requirements on the systematic risk of the firms.

Martin, Anderson and Keown [1979] studied seventeen firms that capitalized lease commitments during the years 1966-1974. Using a CAR analysis they were unable to find any significant market reaction in terms of the firms' security returns. They were further unable to detect any significant risk changes for the firms studied. The focus of that study was the voluntary capitalization of lease commitments and it did not directly consider the impact of an accounting policy decision such as ASR 147 or SFAS 13, although the evidence is presented as bearing upon such decisions. Several limitations with regard to the sample used and methodology employed draw into question the extent to which the results can be taken as supporting the conclusion drawn: that there was no market reaction to the capitalization of leases.

A recent study by Bowman [1980] attempted to assess the debt equivalence of leases. Bowman, using a theoretical model developed earlier [Bowman, 1979], tests whether the information on the present values of lease capitalization is impounded into the market-based measures of systematic risk. With a sample of 92 firms in 7 industries, Bowman tests a multiple regression using market risk as the dependent variable and an accounting beta, a debt-to-equity ratio and a leases-to-equity ratio as independent variables. After controlling for the problem of multicolinearity, Bowman found that leases were significantly associated with market risk. One problem with the theoretical formulations implicit in the methodology is the strong form of market efficiency that is assumed. This assumption is unwarranted. Evidence reported by Jaffe [1974] and

Finnerty [1976] does not support the efficient market hypothesis in the strong form.

Bhamornsiri [1979] approached the same issue as Bowman and, using a different methodology, arrived at the conclusion that lease captialization as a method of disclosure was not more relevant than alternative methods of disclosure. These results, while not directly contradictory to Bowman's conclusions, are difficult to reconcile with Bowman's result except for methodical reasons. Further results reported by Bhamornsiri suggest no change in the level of systematic risk for leasing firms as a result of either APB Opinion 31 or ASR 147.

Another recent study by Finnerty, Fitzsimmons and Oliver [1980] considers the impact of lease capitalization, as per ASR 147 and as per SFAS 13, upon the systematic risk of certain companies whose balance sheets were most dramatically affected by the pronouncements. Using the Chow test methodology, they were unable to find a significant effect for most firms studied. However, because of the low power of the Chow test to detect relatively small shifts in beta when analysis is done on individual securities, their evidence cannot be considered conclusive.

Pfeiffer [1980] studied the economic effects of lease accounting using agency theory as a theoretical approach and employing the Arbitrage Pricing Model (APM) which he argued to be more general than the CAPM. He did find a significant security price effect associated with SFAS 13. The strength of the effect appeared to be related to the effect of capitalization on loan agreements and the renegotiation of those agreements. In addition he found the most significant date associated with SFAS 13 to be the November 1974 public hearings.

Two major research projects have addressed the leasing issue in some detail. Ferrara, Thies and Dirsmith [1980] studied the lease-purchase decision itself, and the potential impact of SFAS 13 on that decision in a study commissioned by the National Association of Accountants, while Abdel-Khalik, et al. [1981] studied the various effects of lease accounting as prescribed by SFAS 13 in a major project commissioned by the FASB.

Ferrara, Thies and Dirsmith [1980] reached several conclusions with potential importance to the current research. In general, firms with high leverage and low profit were most likely to be involved in leasing. Smaller firms or firms financially weaker in terms of leverage, profit and liquidity were found to pursue leasing for different reasons than larger firms. Small firms cited flexibility, working capital conservation, financing restrictions and off-balance sheet financing as important considerations in the leasing decision. Larger firms and more financially sound firms tended to stress implicit interest costs, obsolescence and income taxes as factors which were important in their decisions. Ferrara, Thies, and Dirsmith also draw the following conclusions:

> FASB No. 13 was not, in general, expected to have much of an impact; however, in the case of U.S. firms, those firms most vulnerable to FASB No. 13 (high leverage, low profit, and weak current ratio) did anticipate more impact on their lease-purchase decisions and their FASB No. 13 circumvention activities. (p. 71)

They also report that bond raters strongly felt that there would be no impact on bond ratings from SFAS 13 since the raters were already capitalizing the leases in their analyses.

The FASB commissioned Study of the Effects of Accounting for Leases (SEAL) by Abdel-Khalik et al. addressed the issue of a market reaction to SFAS 13 and considered the possibility of managerial action in response

to the prescriptions of SFAS 13. In their analyses Abdel-Khalik developed a rationale for managers' taking certain actions to reduce the apparent impact of SFAS 13 on their financial statements, and identified the following set of actions [pp. 44-45].

1) actions to increase owners' equity
   --e.g. early conversion of bonds to stocks,

2) actions to reduce long term debt
   --e.g. early retirement of such debt,

3) actions to reduce total assets
   --e.g. early retirement of long term debt,

4) actions to reduce leasing
   --e.g. increase purchasing,

5) actions to increase income
   --e.g. reducing discretionary expenses.

In their subsequent analyses, they consider the effect of SFAS 13 and managerial actions on the structure of financial statements as if complete capitalization of the leases were in effect. These analyses involve study of trends, profiles and financial group memberships. Later analysis focuses on the aggregate effects on the market's equilibrium price of common stock and market-based systematic risk of SFAS 13. A tentative conclusion at which they arrived was that a number of companies with substantial lease commitments appear to have taken actions that are infrequent and unusual, consisting mainly of changes in financial decisions, and that these actions could be attributed to responses to lease capitalization. In addition, based on study of firms in three heavy leasing industries, airlines, fast food chains, and retailers, they conclude that firms identified as having taken mangerial actions to mollify the effects of SFAS 13 on debt ratios did have significantly greater declines in systematic risk than did firms not taking such action. It was the belief of Abdel-Khalik

et al. that the actions taken by those firms were made more appealing if not primarily motivated by the effects of SFAS 13.

Much of the research to date on the effects of lease accounting policy decisions has been contradictory or tenuous in its conclusions. The SEAL project, of most recent origin, has begun to focus the research effort toward an assessment of the full impact of the new standards and an understanding of that impact. It is the extension of this research objective that is to be pursued by the current research.

C H A P T E R III

RESEARCH ISSUES, OBJECTIVES AND SAMPLE IDENTIFICATION

As discussed earlier, the purpose of this research is to identify and examine any economic consequences resulting from the policy decisions on the lease disclosure issue made by authoritative bodies responsible for prescribing accounting standards. Economic consequences might take any of several forms:

1) corporate management may take action in response to required accounting changes to circumvent the new accounting rules, or may actually alter investment or financing decisions;
2) capital market participants may react to new information made available as a result of the required accounting change;
3) capital market participants may react to the actions taken by management;
4) capital market participants may anticipate management actions in response to the changed accounting standard.

Accounting changes discussed earlier may be identified as either discretionary or mandatory and as either cosmetic or substantive. Since the type of accounting changes being considered in this research is a result of action taken by a standard setting body, it is the mandatory-cosmetic and mandatory-substantive categories which are important for this research. Accounting changes which are mandatory but cosmetic still might have real economic consequences if management takes action to circumvent new standards and capital markets react to or anticipate such management action. Accounting changes which are mandatory and substantive may have real economic conse-

quences becuase of a change in the information set available to market participants, because of management action or because of capital market reaction to or anticipation of management action.

The two changes in accounting disclosure requirements being considered, ASR 147 and SFAS 13 are clearly mandatory, but whether either is cosmetic rather than substantive is less clear. ASR 147 did require the disclosure of information in 10-K reports filed by lessees with the SEC which may not have been publicly available prior to ASR 147. While this information, the net present value of non-capitalized financing leases and pro forma effect on net income had the leases been capitalized, might have no effect on cash flows, it did represent information about the capital structures of firms affected by the ruling, which might affect the market's assessment of firms' riskiness. Whether such information regarding the leases was available from alternative sources, such as financial analysts, is not clear. SFAS 13 did not require the disclosure of new information, only that information previously provided as supplemental disclosures be moved to the body of the financial statements. In that sense, SFAS 13 would be considered cosmetic, but there is some evidence [Abdel-Khalik, 1981] that indicates lessee firms may not have been fully complying with ASR 147 prior to the issuance of SFAS 13, so that the SFAS 13 disclosures may have revealed some new information on the affected firms' capital structures.

Within this framework, the following research issues are presented:

1) Can actions be identified which were undertaken in response to ASR 147 and SFAS 13 by firms which were affected by those pronouncements?
2) Can an abnormal reaction be identified in the returns and systematic risk of the common stock of firms affected by ASR 147 and SFAS 13?
3) Can any observed market reaction be explained either by underlying

characteristics of individual firms or by actions undertaken by the management of those affected firms?

An investigation of the preceding questions should provide further information on several aspects of the economic consequences of the accounting standards setting process. If policy decisions requiring changes in accounting methods are related to management's choice of investment opportunities or financing methods, then even those required accounting changes which are apparently cosmetic may have real consequences for the firms affected. Evidence on the consequences of such policy decisions may be useful to policy makers if they believe that the possible impact of policy decisions should be explicitly considered in their decision-making process.[4] Perhaps more importantly the management of firms affected by accounting standards may find the information useful in assessing their positions on and response to various standards.

Research Problem

A number of authors (Abdel-Khalik et al. [1981], Dieter [1979], Inberman, Ronen and Sorter [1979], Phalen [1978], Davidson and Weil [1975]) representing both the academic world and the business community have suggested that the effects of SFAS 13 would be undesirable in the eyes of management. Most of those authors seemed to believe that the chief negative consequence from the perspective of management would be the apparent deterioration of the debt-to-equity ratios or the financial leverage of the firms affected. Barron's, in 1977, reported some of the negative sentiment felt in the business and financial community; among the greatest concerns expressed were that the curtailment of credit lines and the contraction of expansion plans might result. Dieter [1979] felt that, in response to SFAS 13, many firms

would seek to circumvent the spirit of the statement using third party guarantees of residual values to assure that leases qualify as "operating leases" to the lessee. Abdel-Khalik et al. [1981] enumerated a series of possible actions that management might undertake in order to mollify the effects of SFAS 13 on financial statements. These have been discussed in Chapter Two.

In light of the prior research in the academic literature and the speculation in the popular financial media it was felt that sufficient reason exists to pursue the impact of lease accounting requirements on firms affected by ASR 147 and SFAS 13. Studies of other accounting policy decisions have pursued the issue of the impact of a decision mandating a change in accounting methods or disclosures in several ways. Dukes, Dyckman and Elliot [1980] and Horowitz and Kolodny [1980] considered the effects of SFAS 2, Accounting for Research and Development Costs, on variables reflecting corporate research and development decisions. Lev [1979], Collins and Dent [1979] and Dyckman and Smith [1979] have studied the capital market impact of policy decisions regarding oil and gas accounting methods, the proposed SFAS 19. Collins, Rozeff and Dhaliwal [1980] have pursued capital market reactions one step further by examining explanatory theories for the market reaction to the oil and gas accounting proposals.

While research regarding policy decisions on lease disclosure and accounting has addressed several of the issues relating to corporate decisions and capital market reaction, there has been no full development of a theory or of models to explain capital market reaction, if any, in terms of corporate decisions or underlying firm characteristics. It is that avenue that is explored in this research project.

Sample Identification

The research project involves three research questions. To restate them, they are:

1) Can actions be identified which were undertaken in response to ASR 147 and SFAS 13 by firms which were affected by those pronouncements?
2) Can an abnormal reaction be identified in the returns and systematic risk of the common stock of firms affected by ASR 147 and SFAS 13?
3) Can any observed market reaction be explained either by underlying characteristics of individual firms or by actions undertaken by the management of those affected firms?

Since the sample of firms selected for study is largely the same for each research issue, this discussion precedes the discussions of the methodology used for each research question.

An experimental sample was necessary for each accounting pronouncement, ASR 147 and SFAS 13, that was studied. For this sample, firms were selected which had relatively large amounts of noncapitalized financing leases in the year of the accounting policy decision. For ASR 147 the year used was 1973 and for SFAS 13 the year used was 1975.[5] Firms selected for the two experimental groups were not required to be the same firms for both pronouncements nor were firms in one experimental sample specifically excluded from the other.[6] For this study the criterion used to define relatively large amounts of leases was the present value of noncapitalized financing leases exceeding 5% of reported total assets before capitalization of the leases. This is one threshold for materiality of leases suggested by Abdel-Khalik, et al. [1981].[7] The firms were selected from firms with data available on the Compustat Price, Dividend and Earnings (PDE) and Industrial data bases and on the Center for Research in Security Prices (CRSP) data bases.

In addition, further information and data was obtained using the AICPA's Accounting Trends and Techniques, Value Line Investor's Surveys and the SEC's Disclosure Journal.

For this study, and others which study accounting policy decisions, it is important to identify an appropriate sample of control firms which are as similar as possible to the experimental group of firms under study. In studies of accounting policy making, firms which are affected by a particular decision are self-selected into the experimental group. Foster [1980] discusses this problem in detail, and recommends some procedures to assess differences between experimental and control samples, other than the variable under study, that may confound results. The firm profile analysis that Foster recommends is discussed in further detail after discussion and presentation of the matching procedure employed.

In this study, the dependent variables under consideration in the first two parts are, respectively, variables reflecting changes in financing policy for the sample firms and variables reflecting security returns and changes in the systematic risk. A logical control group would be one with firms similar to the experimental firms, except for the choice of the method employed to account for financing leases. Consequently, the control firms selected were those having substantial capitalized leases, but as similar as possible to the experimental firms on other factors that might affect the observations on the dependent variables. The variables selected for matching attempt to control for the potential confounding effects associated with differences in industry, firm size, relative risk and financial leverage. Although it is desirable to match firms on as many aspects as possible, a limited number of matching variables must be used so that samples of reasonable size may be obtained. Further procedures can be undertaken, as

Foster [1980], suggests, to determine if any significant differences exist between the group of firms on important variables not included inthe matching procedures. The reasons for the selection of industry, firm size, relative risk and financial leverage as matching variables are discussed subsequently.

Theoretical work by Modigliani and Miller [1958] and empirical research by King [1966] and Fertuck [1975] suggests the possibility of an industry effect with respect to security price behavior. In light of this evidence, it was felt that industry differences could contribute to observed differences between the experimental group and control group if not taken into account.

The possible effects of firm size are discussed by Watts and Zimmerman [1978] and Banz [1979]. Watts and Zimmerman suggest that political and information production costs are different for smaller than for larger firms, and Banz suggests that investors require a higher rate of return for small firms which are relatively unknown and which have higher information costs. Although results presented by Collins, Rozeff and Dhaliwal [1980] and are not consistent with Banz' findings, it was felt that sufficient question exists regarding firm size to control for that factor.

Gonedes and Dopuch [1974] and Gonedes [1975] note that relative risk is important in any study of the market consequences of new information. In addition, evidence presented by Blume [1975, 1979] and Elgers, Haltiner and Hawthorne [1979] suggests that for a number of reasons ordinary least squares estimates of beta regress toward a mean of one. Different relative risk for experimental versus control firms could explain observed differences in dependent variables, therefore firms will be matched on this variable. Hamada [1972] and Bowman [1979] have shown a theoretical link between financial leverage and systematic risk, and Beaver, Kettler, and Scholes [1970],

Beaver and Manegold [1975], Elgers [1980] and Bowman [1980] have all shown an empirical relationship between market risk and financial leverage. In light of this evidence, financial leverage was chosen as a variable on which to match. Additionally, changes in financial leverage undertaken by each firm will be a dependent variable studied in this research.

The variables used in the matching procedure are defined as follows:

1) For industry, a four-digit Compustat Industrial Classification Code;[8]
2) For firm size, total assets reported in the balance sheet in the year of the accounting pronouncement;
3) For systematic risk, the beta coefficient from the market model, with the adjustment suggested by Vasicek [1973];[9]
4) For financial leverage, the carrying value of total liabilities and preferred stock divided by the carrying value of total liabilities and preferred stock plus the market value of common equity.

With respect to the measurement of these variables, each is, to some extent, an imperfect measure of the factors which they are designed to capture. Each has been employed in prior research. Abdel-Khalik, et al. [1980] used four digit SIC codes and total assets as paritioning variables in their study of SFAS 13, to reflect industry and firm size respectively. Bowman [1980] uses the market model beta as a surrogate measure for CAPM systematic risk, and notes that, while it is not without measurement error, this is not a realtively troublesome issue.[10] In addition, Bowman [1980] and Elgers and Murray [1981] use a hybrid definition of financial leverage incorporating book values for debt and market values for common equity.

The procedure employed to implement the matching of these initial samples was the identification of a group of potential match firms from the Compustat

data base within each industry as defined by the four digit industry classification code, but consisting of firms with lease commitments capitalized. Each firm was matched with its closest match from among the potential match firms based upon a minimization of the Mahalanobis distance measure D^2. The D^2 measure was used to compute the distance of each potential match firm from the experimental firm on the three latter matching variables, as defined previously:

1) total assets

2) systematic risk (beta)

3) financial leverage.

The distance measure employed is Mahalanobis' D^2:

$$D^2 = (\chi_{ik} - \chi_{jk})' \; C_k^{-1} \; (\chi_{ik} - \chi_{jk}) \qquad (6)$$

where

χ_i is the vector of variable scores for each potential experimental firm i

χ_j is the vector of variable scores for each potential match firm j

C_k^{-1} is the variance-coverance matrix within the cross-section of firms.[11]

Each firm was matched with the potential match firm with the minimum D^2 score within that industry. Table 2 presents the results of the matching procedure for ASR 147 sample firms and Table 3 presents the results for SFAS 13 sample firms. For ASR 147, a total of 23 matches were produced and for SFAS 13, a total of 46 matches were produced. It should be noted that not every potential experimental firm was matched and not every potential match firm selected because in some industries there were many more potential experimental firms than potential matches and in other industries, the

TABLE 2

ASR 147 SAMPLES

Industry	Experimental Firm	Matched Firm	D^2
2010	Kane Miller	Iowa Beef Processors	.065
2200	Fieldcrest Mills	Springs Mills	.473
2300	Hart, Schaffner & Marx	Jonathan Logan	.494
2300	Lilli Ann Corp.	Garan Inc.	.225
2300	Noel Inds.	Interco Inc.	.348
2649	Hexcel Corp.	Papercraft Corp.	1.092
2800	Allied Chemical	Rohmand Haas	1.408
3000	Cooper Tire & Rubber	Dayco Corp.	2.250
3000	Uniroyal	Firestone Tire	.127
3210	Seagrove	Guardian Inds.	2.290
3241	Kaiser Cement	Ideal Basic Inds.	.201
3270	National Gypsum	Gifford Hill & Co.	.087
3310	Crane Co.	Bliss & Laughlin Inds.	1.202
3310	La Barge	Lukens Steel	.012
3310	Unarco	National Steel	.921
3350	Belden	Revere Copper & Brass	.134
3560	Milton Roy	Sta-Rite Inds.	.391
3630	Scovil	Reece Corp.	1.165
3662	Raytheon	King Radio	1.648
3714	Teleflex	Kysor Industrial	.296
3811	Whitehall	United Industrial	.687
9997	Katy Inds.	Alaska Interstate	1.591
9997	LTV Inds.	Litton Inds.	1.266

TABLE 3

SFAS 13 SAMPLES

Industry	Experimental Firm	Matched Firm	D^2
2000	Consolidated Foods	Quaker Oats	.168
2010	Rath Packing	Valmac	.868
2046	Staley Mfg.	American Maize Products	.159
2200	West Point Pepperal	Riegel Textile	.581
2300	Billy the Kid	Jonathan Logan	.535
2300	Damon Creations	Superior	.081
2300	Manhattan Inds.	Salant	.313
2300	Noel Inds.	Decorator Inds.	.612
2300	Phillips Van Heusen	House of Ronnie	.882
2300	Piedmont Inds.	Movie Star	.196
2300	Puritan Fashions	Palm Beach	.669
2450	Golden West Homes	Kit Mfg.	1.680
2649	APL Corp.	Dennison Mfg.	1.193
2761	Duplex Prods.	Ennis Business Forms	.456
2820	Pantasote Inc.	Reichold Chemicals	2.243
2844	Helene Curtis	Faberge	1.989
2911	Ashland Oil	Cities Service	2.984
3000	Armstrong Rubber	Mohawk	.140
3079	Cellucraft	Monagram	.190
3079	Robintech	Voplex	.802
3310	Hofmann Inds.	Allegheny Ludlum	1.155
3410	National Can	Van Dorn	1.534
3449	Brooks & Perkins	Nucor	.322
3449	Republic	Philips	.089
3540	Esterline	Acme Cleveland	1.994
3560	Scott & Fetzer	National Mine	.075
3610	Gould	UV Inds.	.773
3662	Moog	Barnes Engineering	2.495
3679	Analog Devices	Veeco	.308
3679	International Rectifier	Electro Audio Dynamics	1.577
3714	Arrow Automotive	Howell	.476
3714	Intermark	Federal Mogul	1.200
3714	Whitaker Cable	Kysor Industrial	.211
3940	Mattel	Medalist Inds.	2.772
4210	Banner Inds.	Golden Cycle Corp.	.163
4210	Spector	Telecom Corp.	.019
5063	Action Inds.	Clark Consolidated Inds.	.022
5065	Sterling Electronics	Arrow Electronics	1.176
5199	SMD Inds.	Universal Leaf Tobacco	1.477
5912	Gray Drug	Cunningham Drugs	1.153
5912	Payless Drug Stores	Revco Drug Stores	.346
5944	Jewelcor	Medco Jewelry	2.163
5980	Suburban Propane	DWG Corp.	2.630
7370	Bolt, Beranek & Newman	Chilton Corp.	1.480
8050	Cenco	Beverly Enterprises	2.348
8060	Huntingdon Health	Humane Inc.	.319

opposite held true.[12]

As an additional control procedure, following Foster's [1980] suggestion, a non-parametric analysis was conducted of firm financial profiles. This was included to evaluate further the effectiveness of the matching procedure and because, as Foster notes, in controlling for firm profile differences, research should concentrate on:

1) alternative theories as to why the accounting policy decision might have the impact being studied, and
2) alternative models as to how capital asset prices are determined.

The firm profile analysis considered the following variables:

1) total assets
2) systematic risk, as previously defined
3) financial leverage
4) current ratio
5) dividend yield as defined by:

$$\frac{\text{Cash dividends on common shares}}{\text{Market value of common shares outstanding at fiscal year end.}}[13]$$

The first three of these were the matching variables discussed earlier, and are included for that reason. The current ratio is included because evidence cited by Ferrara, Thies and Dirsmith [1980] indicates that the firms most likely to alter lease-purchase decisions as a result of SFAS 13 were financially weaker firms in terms of leverage and liquidity. Finally, dividend yield is included as a means of partially controlling for the possibility that dividend yield may be a determinant of security returns (Brennan [1973]; Litzenberger and Ramaswamy [1979]).

The firm profile analysis as suggested by Foster [1980] consisted of

the Mann-Whitney U test, discussed by Hollander and Wolfe [1973], to test differences between the experimental and control groups on those variables. The Mann-Whitney U test is a non-parametric test for differences between groups on the median of variables. The results, presented in Table 4, indicate no significant differences between the experimental and control groups on any of the variables tested at the .05 level of significance, although for the SFAS 13 samples, the experimental and matched group were significantly different on the dividend yield variable at the .10 level of significance. This provides some evidence that the firms in each group of matched samples are similar on these variables in the years prior to the release of the accounting pronouncements being studied.

Finally, it was felt that, in order to strengthen the analysis of the second and third research issues under consideration, and to facilitate comparison of results and conclusions with other studies of the mandatory lease capitalization issue, a supplemental sample of firms could be identified from samples used in prior studies of the effects of SFAS 13. Drawing on samples reported by Finnerty, Fitzsimmons and Oliver [1980] and Abdel-Khalik et al. [1981], a sample was identified of 60 additional firms having substantial amounts of non-capitalized leases prior to the release of SFAS 13.[14]

TABLE 4

Firm Profile Analysis

	Non-Capitalizing Firms		Control Firms		
ASR 147 (1973)	Mean	Median	Mean	Median	Z Statistic for Mann-Whitney
*Total Assets	427.423	180.749	496.350	152.913	0.417
Debt Ratio	.658	.693	.582	.603	1.560
Systematic Risk	1.22	1.19	1.12	1.08	0.699
Current Ratio	2.579	2.290	2.680	2.354	0.534
Dividend Yield	0.044	0.048	0.046	0.052	0.291
SFAS 13 (1975)					
*Total Assets	166.720	58.000	193.280	73.600	0.916
Debt Ratio	.675	.713	.673	.698	0.659
Systematic Risk	1.18	1.18	1.15	1.20	0.066
Current Ratio	2.269	2.089	2.504	2.350	1.106
Dividend Yield	0.0216	0.0153	0.0361	0.0304	1.846[1]

* in MM $

[1] significant at .10 level of significance

None significant at .05

C H A P T E R I V

TESTS OF CHANGES IN FINANCIAL AND LEASING VARIABLES

Research Question

The first question to be examined by this study is whether the managements of firms affected by ASR 147 and SFAS 13 took any action, such as changing financing or investment decisions, in response to policy decisions. To address this question, it is necessary to analyze the nature of possible management action. One place to start this analysis is with the opinions expressed by the popular financial media.

In a November 1977 article, Barron's reported some of the negative sentiment felt by the accounting profession and business leaders. Among the greatest fears expressed were the curtailment of credit lines and the contraction of expansion plans. Many articles [Phalen, 1978; Ingberman, Ronen and Sorter, 1979; Davidson and Weil, 1975] tend to identify the chief negative consequences, in the view of management, as the effect upon the financial leverage or debt/equity ratios of the firms affected. It is these apparently cosmetic consequences that have attracted the most attention in the press.

The other major effect, and a possible source of negative sentiment, is the effect of lease capitalization on income, which is not as predictable as the apparent effect on leverage. Ingberman, Ronen and Sorter suggest, however, that under most circumstances, operating income will decrease under lease capitalization, at least initially, and this coupled with the increase in total assets could adversely affect return on investment and other profitability measures. It is interesting to note that some further

reasons, as reported by Abdel-Khalik, et al. for opposition to SFAS 13 were that lease capitalization would adversely affect certain internal operating systems and require a major internal reorganization and re-structuring of the budget system.

The major effects discussed in the financial press were the two cosmetic effects:

1) apparently increased financial risk and

2) apparently decreased profitability.

It is unlikely that management would either recognize or acknowledge those effects as being cosmetic since it seems that many non-academics either do not understand or do not accept the efficient markets hypothesis [Mayer-Sommer, 1980].

Given this assessment, it may by hypothesized that managerial action taken in response to either ASR 147 or SFAS 13 would attempt to minimize the apparent effect on financial statements. Actions suggested by Abdel-Khalik, et al. were actions to lower the debt to equity ratio. This was found by Abdel-Khalik to have occurred for certain firms affected by SFAS 13. Firms could accomplish this in a variety of ways which were discussed earlier. Other management responses to either pronouncement might involve changes in the lease-purchase decisions, buying instead of leasing, [Ferrara, Thies and Dirsmith, 1980] and restructuring of existing leases or structuring of new leases so as to circumvent the accounting statements [Dieter, 1979; Abdel-Khalik, et al., 1981; Ferrara, Thies and Dirsmith, 1980].

Dependent Variables

Since the question addressed in this first section of the research is what effect these accounting standards may have had on managerial decisions with regard to financing and investment policy, the appropriate dependent variables analyzed would be financial variables reflecting changes in financing and investment policy from the period prior to the accounting pronouncement to periods thereafter. Therefore, the data used reflected changes from 1973 to 1974, 1975 and 1976 for the ASR 147 sample and changes from 1975 to 1977, 1978, and 1979. These years were chosen because formulation of ASR 147 took place during 1973, with its provisions taking effect in November 1973, and formulation of SFAS 13 occurred during 1975 and 1976, with the effective date being January 1977.

In light of evidence previously cited Barron's [1977], Dieter [1979], Ferrara, Thies and Dirsmith [1980], and Abdel-Khalik et al. [1981], it was felt that the important financial variables for study should attempt to reflect changes in financing decisions and in lease-purchase decisions. One ratio was used to assess changes in the financial structure of the samples of firms and two variables reflecting leasing were studied:

$x_1 \equiv$ change in the book value of debt to total assets ratio[15]

$x_2 \equiv$ percentage change in the present value[16] of financing lease commitments

$x_3 \equiv$ percentage change in rental expense.

The operational definition of these measures is as follows:

$$x_1 \equiv \left[\frac{\text{Book Value of Debt + Preferred Stock}}{\text{Total Assets}}\right]_{t+i} - \left[\frac{\text{Book Value of Debt + Preferred Stock}}{\text{Total Assets}}\right]_{t}$$

$$x_2 \equiv \frac{\text{PV financing leases}_{t+i} - \text{PV financing leases}_{t}}{\text{PV financing leases}_{t}}$$

$$x_3 \equiv \frac{\text{Rent Expense}_{t+i} - \text{Rent Expense}_{t}}{\text{Rent Expense}_{t}}$$

The data used was gathered largely from the Compustat Industrial file, supplemented with 10-K reports filed by the companies with the SEC.

Hypotheses and Data Analysis

For each accounting pronouncement studied there were two samples, a non-capitalizing group and a matched control group. In analyzing this data, the Hotelling T^2 procedure for testing the significance of the difference between the centroids of matched samples was used.

The i^{th} pair of observations on j variables yields the following difference vector:

$$d_i = \begin{bmatrix} x_{i1}^{(N)} - x_{i2}^{(C)} \\ x_{i2}^{(N)} - x_{i2}^{(C)} \\ \vdots \\ x_{ij}^{(N)} - x_{ij}^{(C)} \end{bmatrix} \quad \begin{array}{l} i = 23 \text{ for ASR 147} \\ \qquad 46 \text{ for SFAS 13} \\ j = 3 \qquad (7) \\ \\ (N) = \text{noncapitalizing firms} \\ (C) = \text{control firms} \end{array}$$

The mean difference vector is the centroid of difference scores and is the same as the difference between the centroids of the two matched samples:

$$\underset{\sim}{\bar{d}} = \sum_{i=1}^{N} \underset{\sim}{d}_i / N \qquad (8)$$

where N is the number of matched pairs in each group of samples. The hypothesis which will be tested in that the population centroid difference scores is the null vector and, according to Tatsuoka [1971] the appropriate test statistic is the Hotelling [1931] T^2, a multivariate extension of the univariate t statistic. Hotelling's T^2 is:

$$T^2 = N(N - 1)\, \underset{\sim}{\bar{d}}' S_d^{-1} \underset{\sim}{\bar{d}} \qquad N = \begin{matrix} 23 \text{ for ASR 147} \\ 46 \text{ for SFAS 13} \end{matrix} \qquad (9)$$

where S_d^{-1} is the sums-of-squares and cross-products matrix and

$$\frac{N - P}{(N - 1)P} T^2 \sim F^P_{N-P} \qquad P = 3$$

where P is the number of difference scores in the vectors.

The general hypothesis to be tested is that there is no difference between noncapitalizing firms and their matched counterparts with respect to the changes in the variables reflecting the financing and leasing policies of the firms.

Specifically, the hypotheses are these:

H_o: $\mu_d = \emptyset$ for ASR 147 matched samples

H_a: $\mu_d \neq \emptyset$ for ASR 147 matched samples

and

H_o: $\mu_d = \emptyset$ for SFAS 13 matched samples

H_a: $\mu_d \neq \emptyset$ for SFAS 13 matched samples

Results

The results of the Hotelling T^2 tests are summarized in Table 5. For the ASR 147 test periods no significant differences were found between the experimental group and control group on the variables studied: changes in the book value of debt to total assets[17], changes in rental expense and changes in the present value of financial leases. For the SFAS 13 test periods, however, the results are indicative of differences between the noncapitalizing firms and the capitalizing firms on financing and leasing policies. Specifically, the F statistic for the 1975 to 1978 test period is statistically significant at the .05 level of significance and the F statistic for 1975 to 1979 is significant at .01[18], indicating that for selected samples of experimental and matched control firms the null hypothesis of no difference between the two groups may be rejected for the 1975 to 1978 period and the 1975 to 1979 period.

This evidence indicates that for the firms affected by the SEC's ASR 147 ruling, no significant changes in financing or leasing policy were detectable. This result is not surprising in that there were no indications in popular financial media that managers of affected firms viewed ASR 147 as threatening. Apparently, the belief was that such supplemental disclosure, confined to 10-K reports and footnotes to financial statements, would not affect firms' ability to obtain further capital. Although some empirical evidence (Ro [1977]) indicates that security prices of firms making supplemental disclosures under ASR 147 were affected by that ruling, there is no evidence indicating that the management of those firms took any action in response to it, since prior research has not addressed this issue.

In contrast, for SFAS 13, reports in the financial press bore out

TABLE 5

HOTELLING T^2 TEST RESULTS

Test Period -- ASR 147	T_d^2	F Statistic	Critical F*
1973 - 1974	2.879	.872	4.94
1973 - 1975	7.099	2.151	4.94
1973 - 1976	9.447	2.863	4.94
Test Period -- SFAS 13	T_d^2	**F Statistic**	**Critical F***
1975 - 1977	5.1543	1.642	4.31
1975 - 1978	13.2687	4.226(1)	4.31
1975 - 1979	14.9076	4.721(2)	4.35

* Critical F Statistics:

F^3_{20} (.05) = 3.10

F^3_{20} (.01) = 4.94

F^3_{40} (.05) = 2.84

F^3_{40} (.01) = 4.31

F^3_{38} (.05) = 2.86

F^3_{38} (.01) = 4.35

(1) Significant at the .05 level of significance

(2) Significant at the .01 level of significance

the suppostion that the management of affected firms would view SFAS 13 in a negative light, fearing the curtailment of credit lines and a negative reaction in the capital markets resulting from the apparent deterioration of debt to equity ratios. Evidence presented by Abdel-Khalik et al. [1981] indicated that many firms did take action to mollify the effects of SFAS 13 on financial statements, and the results from this study add further support to this assertion. In light of the strong negative reactions by affected firms to SFAS 13, the results presented here, suggesting changes in financing and leasing policy on the part of the affected firms, are not surprising. Further consideration is given to these issues in subsequent chapters as it bears upon capital market reaction and the proposed explanatory model of market reaction.

C H A P T E R V

TESTS OF CAPITAL MARKET REACTION TO ASR 147 AND SFAS 13

A second major issue to be addressed is the capital market reaction associated with the policy decisions on leasing, ASR 147 and SFAS 13. As noted before, the empirical findings with regard to either policy decision have varied in claiming the presence or lack of market reaction. Ro [1978] claims to have found a reaction to ASR 147, while Finnerty, Fitzsimmons and Oliver [1980] are unable to find a reaction to SFAS 13. Abdel-Khalik, et al. [1981] do note a market reaction after partitioning of their sample into subsamples based upon the action or non-action of management in response to SFAS 13.

Pfeiffer [1980] finds a market reaction using the Arbitrage Pricing Model at the time of the initial public hearings on SFAS 13. In addition, those studies finding, or claiming to find market reactions have differed with regard to the time of the market reaction, and with regard to possible explanations of the capital market reaction.

Sifting through the economic theory and empirical evidence thus far, on economic consequences of accounting policy decisions, three possible explanations emerge for a capital market reaction to either ASR 147 or SFAS 13:

1) new information available to the market as a result of the required accounting change;

2) management action (causing the capital market response); and

3) anticipation by capital market participants of management response to the required change.

The new information available is usually discussed in the accounting literature in terms of changes in expected cash flows as a result of tax implications of an accounting change. However, it is also possible to discuss new information about the firm which has no tax implication or potential cash flow effect. Simmonds and Collins [1978] discuss the implications of the SECs requirement during the late 1960s of line-of-business disclosures. This requirement, while having no tax or cash flow consequences, could have an information impact on the market with regard to the systematic risk of the common stock of affected firms. Given the models devleoped by Hamada [1972], Lev [1974b] and Bowman [1979], a similar case might be argued for ASR 147 increased disclosure requirements. For SFAS 13, the most likely source of a capital market reaction would be either managerial action of some sort or the markets' anticipation thereof.

A final important point of discussion before proceeding with the data, analysis and design, is the timing in each case (ASR 147, SFAS 13) of any possible market reaction. Since the available evidence on market efficiency suggests that information is impounded in security prices very quickly after becoming publicly available, and since statistical problems exist, for many of the tests to be used, when the critical point of market reaction is incorrectly specified, it is desirable to try to identify the most likely point of market reaction to each policy decision. The following is a list of potential critical points for each policy decision:

ASR 147:

June 6, 1973:	Proposal Announced
October 5, 1973:	Proposal Adopted
November 30, 1973:	Effective Date

SFAS 13:

August 26, 1975:	First Exposure Draft
July 22, 1976:	Revised Exposure Draft
December 2, 1976:	SFAS 13 (press release)[19]
January 1, 1977:	SFAS 13 (effective date)
August 31, 1977:	ASR 225 adopted[20]

These possible critical events and dates are suggested by Ro [1978] for ASR 147 and Abdel-Khalik, et al., [1980] for SFAS 13.

Having discussed the justification and timing of a possible market reaction, the research will proceed in three stages: 1) identification of the most likely critical point of a market reaction, 2) tests of market reaction in terms of abnormal returns, and 3) tests of market reaction in terms of shifts in systematic risk.

Variables and Data

The various tests described in this section are based upon the market model developed by Sharpe [1963] and discussed earlier. The exact form of the model to be used is:

$$\ln(1 + R_{it}) = \alpha_i + \beta_i \ln(1 + R_{mt}) + \varepsilon_{it} \qquad (2)$$

which is, according to Fama [1970], consistent with the CAPM in continuous time. In the above model:

R_{it} is the return on security i in period t;

R_{mt} is the return on the market index in period t;

α_i and β_i are parameters of the model; and

ε_{it} is the random disturbance term for period t, with an expected value of zero, constant variance and assumed to be non-autoregressive.

The returns are wealth relative returns of the form:

$$R_{it} = \frac{(P_{i,t+1} - P_{it}) + D_{it}}{P_{it}} \qquad (3)$$

where:

P_{it} is the price of the i^{th} security in period t; and

D_{it} is the amount of dividends on the i^{th} security in period t.

Using the models discussed, the purpose in this section was to identify any stock market reaction to either accounting policy decision. The two techniques employed were residual analysis and the Chow test technique. These techniques help the researcher identify one or both of the following market reactions: 1) an abnormal price decline in a security or 2) a shift in the associated systematic risk of the securities. While a variety of competing hypotheses may be identified to explain these market reactions a discussion of these is deferred to the next Chapter.

In order to identify the most likely critical date of a market reaction, given the number of possible dates associated with each pronouncement, an appropriate test was identified to estimate the point in time, if any, at which a discontinuous shift occurs in regression parameters of the market model. This is the Quandt [1958] maximum likelihood method and employs the following statistic:

$$\lambda_{n_1} = \ln\left[\frac{\left(\frac{\hat{\varepsilon}_1' \hat{\varepsilon}_1}{n_1}\right)^{\frac{1}{2}n_1} \left(\frac{\hat{\varepsilon}_2' \hat{\varepsilon}_2}{n_2}\right)^{\frac{1}{2}n_2}}{\left(\frac{\hat{\varepsilon}' \hat{\varepsilon}}{n}\right)^{\frac{1}{2}n}}\right] \qquad (10)$$

This log-likelihood ratio statistic was calculated, for each permissable point n_1 over the range of 1970-1975 for ASR 147 and 1975-1980 for SFAS 13. The analysis was done on portfolio data for the non-capitalizing sample only, since it is this group for which the market reaction is hypothesized, and was done separately for the ASR 147 and SFAS 13 periods. This procedure has been used by Simonds and Collins [1978] as a means of identifying the

most likely crtical data for a shift in systematic associated with the SEC's required line-of-business disclosures. The value of n_1 for which $^{\lambda}n_1$ is minimized in each case represents the most likely critical data for a shift in systematic risk.

Data Analysis Design

Residual analysis. In order to detect any aggregate abnormal price effect or risk shift the four samples will be aggregated into portfolios. Each sample (ASR 147 experimental, ASR 147 control, SFAS 13 experimental, SFAS 13 control) will have the portfolio returns calculated as:

$$WR_{pt} = 1/n \sum_{i=1}^{n} \ln(1 + R_{it}) \qquad (11)$$

where:

WR_{pt} ≡ the wealth relative return in period j for portfolio p;

R_{it} ≡ the return on the i^{th} security (as defined earlier) in period j;

n ≡ the number of firms in each portfolio (sample); and

p ≡ the p^{th} portfolio:

ASR 147 experimental
ASR 147 control
SFAS 13 experimental
SFAS 13 control.

The regression using the market model will then be run to estimate the parameters on each portfolio:

$$WR_{pt} = \alpha_p + \beta_p(WR_{mt}) + \varepsilon_{pt} \qquad (12)$$

The estimation periods, using daily data, were:

May 1972 - May 1973 for the ASR 147 tests; and

June 1974 - July 1975 for the SFAS 13 associated tests.

The residual analysis was done using parameters estimated from the models run on each portfolio for the estimation period.[21] In addition, in light

of recent evidence presented by Elgers and Murray [1981] on the impact of the security market index chosen as proxy for the market portfolio the betas and residuals were analyzed using each of three market indices: 1) the Standard and Poors (SP), 2) the Center for Research in Security Prices (CRSP) Value-Weighted (VW), and 3) CRSP Equal-Weighted (EW) indices.

A predicted return for each period was generated:

$$WR_{pt} = \hat{\alpha}_p + \hat{\beta}_p(WR_{mt}) \tag{13}$$

A residual, or excess return, for each portfolio may then be calculated:

$$\hat{\varepsilon}_{pt} = WR_{pt} - WR_{pt} \tag{14}$$

In this section of analysis, daily return data was used. Residuals were calculated and analyzed over a period of 20 trading days before and twenty trading days after the critical data or dates identified for each pronouncement. The analysis was done by calculating difference scores for the residuals of the matched samples:

$$d(ASR147)_t = \hat{\varepsilon}_{p1t} - \hat{\varepsilon}_{p2t} \tag{15}$$

$$d(SFAS13)_t = \hat{\varepsilon}_{p3t} - \hat{\varepsilon}_{p4t} \tag{16}$$

The method has been used in applied research using residual analysis by Collins and Dent [1979]. They note that calculating difference scores between portfolios of matched firms provides a means of partially controlling for other unspecified events that may have influenced the prices of the securities studied. The analysis employed the Wilcoxon matched-pairs signedrank test which will be described more fully later.

Beta stationarity analysis. Simonds and Collins [1978] have employed the Chow test methodology to assess whether systematic risk (beta) of a security has shifted.

The Chow test, first described by Chow [1960] is a statistical procedure specifically designed to test for statistically significant shifts in the beta coefficient in a linear time series regression. To compute the Chow statistics two separate time periods must be identified. For this study, the critical dates discussed earlier were used. Separate regressions were done on the data before the critical events and after the crticial events. Residuals from each regression were calculated. In addition, a regression was done on the pooled data. The residuals calculated from each regression are:

$$\hat{\varepsilon}_{i1} = R_{i,t_1} - \hat{R}_{i,t_1} \quad \text{(for the first time period)} \tag{17}$$

$$\hat{\varepsilon}_{i2} = R_{i,t_2} - \hat{R}_{i,t_2} \quad \text{(for the second time period)} \tag{18}$$

$$\hat{\varepsilon}_{i} = R_{i,t} - \hat{R}_{i,t} \quad \text{(for the pooled data).} \tag{19}$$

Sums of squared residuals were obtained by transposing each residual vector and post-multiplying it by the untransposed residual vector. The following statistics were calculated:

$$Q_1 = \hat{\varepsilon}_i' \hat{\varepsilon}_i \tag{20}$$

$$Q_2 = \hat{\varepsilon}_{i1}' \hat{\varepsilon}_{i1} + \hat{\varepsilon}_{i2}' \hat{\varepsilon}_{i2} \tag{21}$$

$$Q_3 = Q_1 - Q_2 \tag{22}$$

Q_1 is distributed as a noncentral chi-square (with a noncentrality parameter equal to σ^2) with T-K-1 degrees of freedom, where T is the number of observations and K is the number of independent variables in the model. Q_2 is a noncentral chi-square with $(T_1\text{-}K\text{-}1) + (T_2\text{-}K\text{-}1)$ degrees of freedom (or $T_1 + T_2 - 2K - 2$ d.f.) and Q_3 is distributed as a noncentral chi-square with $(T\text{-}K\text{-}1) - (T_1 + T_2 - 2K - 2)$ d.f. or $(K + 1)$ d.f. (since $T = T_1 + T_2$). The Chow test is:

$$F^{K}_{T_1 + T_2 - 2K - 2} = \frac{Q_3/K + 1}{Q_2/(T_1 + T_2 - 2K - 2)} \tag{23}$$

The form of the regression done on the pooled data incorporated a dummy variable which allowed the intercept coefficient to vary between the sub-periods. As a result, the statistics generated were tests of the hypotheses that the slope coefficient, beta, changed during the test period.

This analysis was done separately for each of the portfolios. This, as noted by Simonds and Collins [1978] enhances the power of the Chow test to detect statistically significant shifts in the beta coefficient of the market model, in comparison to similar analysis done on individual securities.

Supplemental Sample of Firms.

As noted earlier, it was felt that, in order to supplement the analysis and to facilitate comparison of the results and conclusions of this study with those of other studies of the mandatory lease capitalization issue, a supplemental sample of firms, composed of firms used in prior studies of the effects of SFAS 13, should be included. That supplemental sample of 60 firms, as listed in Table 29 in the Appendix, was included in the analyses done in this Chapter.

Hypotheses

It is important to note at this juncture that two variables are being studied in order to assess the market impact of the policy decisions: price reactions and shifts in systematic risk. Observations of these two variables are not necessarily independent. The residuals generated may be systematically biased if there has been a shift in systematic risk for either group of firms. As a result, although the hypotheses were tested separately it must be recognized that it may be impossible to disaggregate abnormal price effects and risk shifts if both have occurred.

Bearing this in mind the following hypotheses were tested:

1) H_o: There was no difference between the ASR 147 leasing sample and control sample subsequent ASR 147 in terms of residuals or excess returns.

   H_a: The residuals of ASR 147 leasing sample firms were significantly lower than ASR 147 control sample firms subsequent to the ASR 147 critical data.

2) H_o: There was no difference between the SFAS 13 leasing sample and control sample subsequent to SFAS 13 in terms of residuals or excess returns.

   H_a: The residuals of SFAS 13 leasing firms were significantly lower than SFAS 13 control sample firms subsequent to the SFAS 13 critical date.

3) H_o: There was no significant difference in the systematic risk (β) of leasing sample firms before and after the release of ASR 147.

   H_a: The systematic risk of leasing sample firms did change significantly after the release of ASR 147.

4) H_o: There was no significant difference in the systematic risk (β) of leasing sample firms before and after the release of SFAS 13.

   H_a: The systematic risk of leasing sample firms did change significantly after the release of SFAS 13.

Results

In order to assess the most likely critical date of a market reaction to either ASR 147 or to SFAS 13, given the number of possible critical dates associated with each pronouncement, the Quandt [1958] maximum likelihood method was used. This method can be useful in helping to identify the point in time at which there occurred a discontinuous shift in the regression parameters of the market model. The statistic employed by the Quandt maximum likelihood technique is:

$$\lambda_{n_1} = \ln \left[\frac{\left(\frac{\hat{\varepsilon}_1' \hat{\varepsilon}_1}{n_1}\right)^{\frac{1}{2}n_1} \left(\frac{\hat{\varepsilon}_2' \hat{\varepsilon}_2}{n_2}\right)^{\frac{1}{2}n_2}}{\left(\frac{\hat{\varepsilon}' \hat{\varepsilon}}{n}\right)^{\frac{1}{2}n}} \right] \qquad (10)$$

where:

n_1 = the number of observations in the first sub-period

n_2 = the number of observations in the second sub-period

n = the number of observations in the entire period of study

$\hat{\varepsilon}_1$ = the vector of calculated residuals from the regressions of the first subperiod

$\hat{\varepsilon}_2$ = the vector of calculated residuals from the regressions of the second sub-period

$\hat{\varepsilon}$ = the vector of calculated residuals from regressions of the entire period of study.

Regressions were run using the market model and returns of portfolios of the non-capitalizing firms in the experimental samples. Monthly data was used from 1969 to 1977 for the ASR 147 sample of firms and from 1972 to 1979 for the SFAS 13 sample of firms. Residuals were calculated from each of two sub-periods for the Quandt log-likelihood statistic. The range of the sub-periods was varied from ending May 1973 to October 1973 for the ASR 147 sample and from ending July 1975 to August 1977 for the SFAS 13 sample. The log-likelihood statistics were calculated using each of the three indices, S and P 500, CRSP Value Weighted and CRSP Equal Weighted. Tables 6 and 7 present the Quandt log-likelihood statistics for the ASR 147 experimental sample and SFAS 13 experimental sample respectively, and Figures 1 and 2 present those statistics graphically. These statistics do not give a clear picture of the most likely critical point associated with a shift in systematic risk for the sample portfolios for either the ASR 147 time period or the SFAS 13 time period. For the SFAS 13 time period, however, there does appear to be a local minimum of the Quandt log-likelihood

TABLE 6

ASR 147 Experimental Sample -- Quandt Log-Likelihood Statistics

Dates	SP 500	CRSPVW	CRSPEW
May 1973	-2.592	-5.636	-3.607
June 1973	* -3.080	-6.117	-4.039
July 1973	-2.637	-5.683	-4.968
August 1973	-2.437	-6.023	* -5.180
September 1973	-2.480	* -6.302	-4.059
October 1973	-2.363	-6.275	-3.733

* local minimum

TABLE 7

SFAS 13 Experimental Sample -- Quandt Log-Likelihood Statistics

Date	SP 500	CRSPVW	CRSPEW
July 1975	-0.727	-4.993	-2.927
August 1975	-0.518	-4.625	-2.986
September 1975	-0.761	-4.410	*-3.464
October 1975	-0.850	*-5.138	-3.244
November 1975	-0.690	-4.700	-3.081
December 1975	-0.822	-4.403	-2.951
January 1976	-0.817	-3.576	-2.431
February 1976	-0.753	-4.242	-2.148
March 1976	-0.747	-4.220	-1.930
April 1976	-0.846	-3.932	-1.695
May 1976	-0.918	-3.883	-1.511
June 1976	-0.925	-4.234	-1.783
July 1976	-0.846	-3.854	-1.598
August 1976	-1.046	-4.119	-1.538
September 1976	-1.210	-4.138	-1.466
October 1976	*-1.315	-3.984	-1.381
November 1976	-1.283	-3.590	-1.365
December 1976	-1.269	-3.172	-1.500
January 1977	-0.561	-4.624	-1.556
February 1977	-0.576	-4.238	-1.505
March 1977	-0.634	-3.892	-1.379
April 1977	-0.737	-3.621	-1.450
May 1977	-0.872	-3.294	-1.365
June 1977	-1.049	-3.295	-1.564
July 1977	-0.839	-3.582	-1.897
August 1977	-1.026	-3.270	-1.741

* local minimum

Figure 1

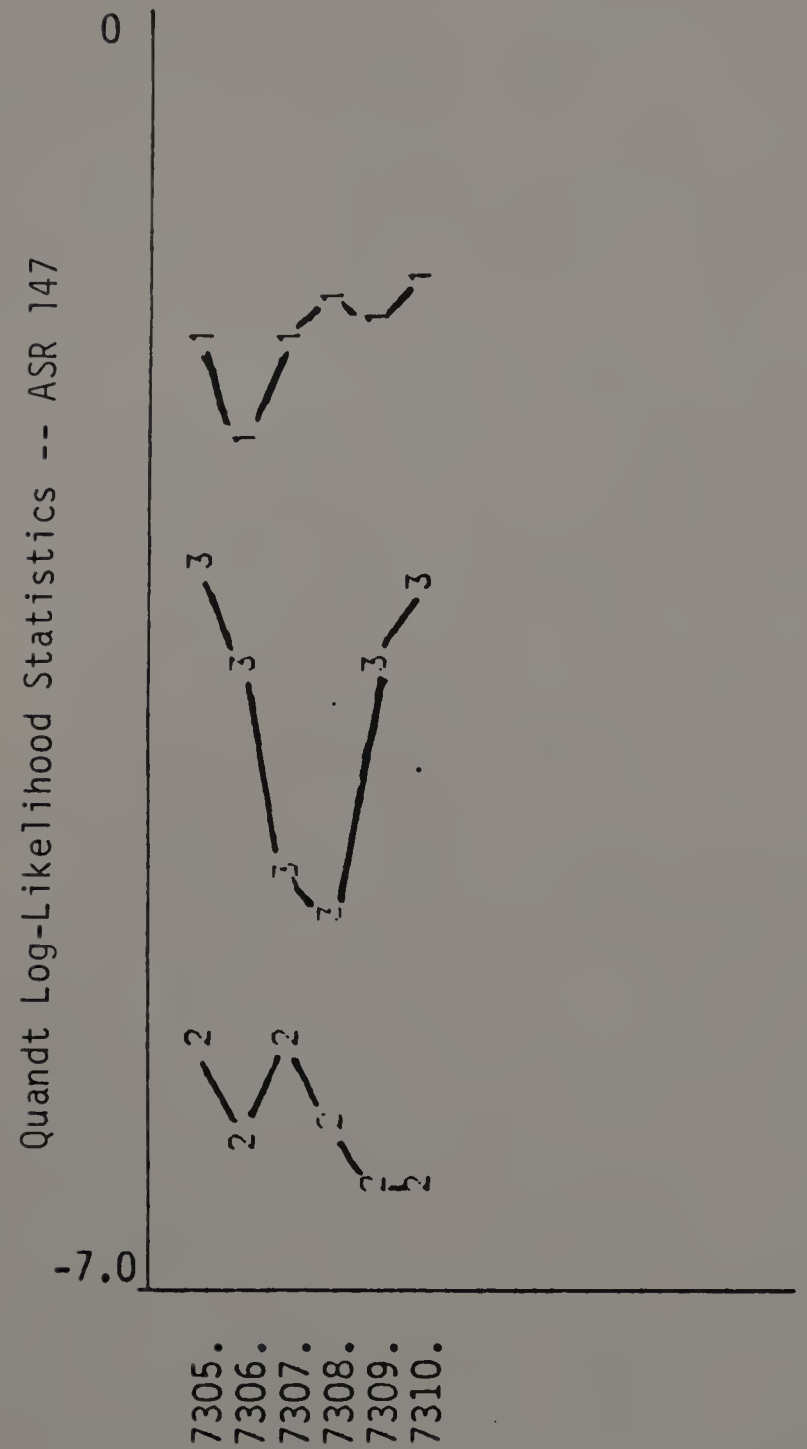
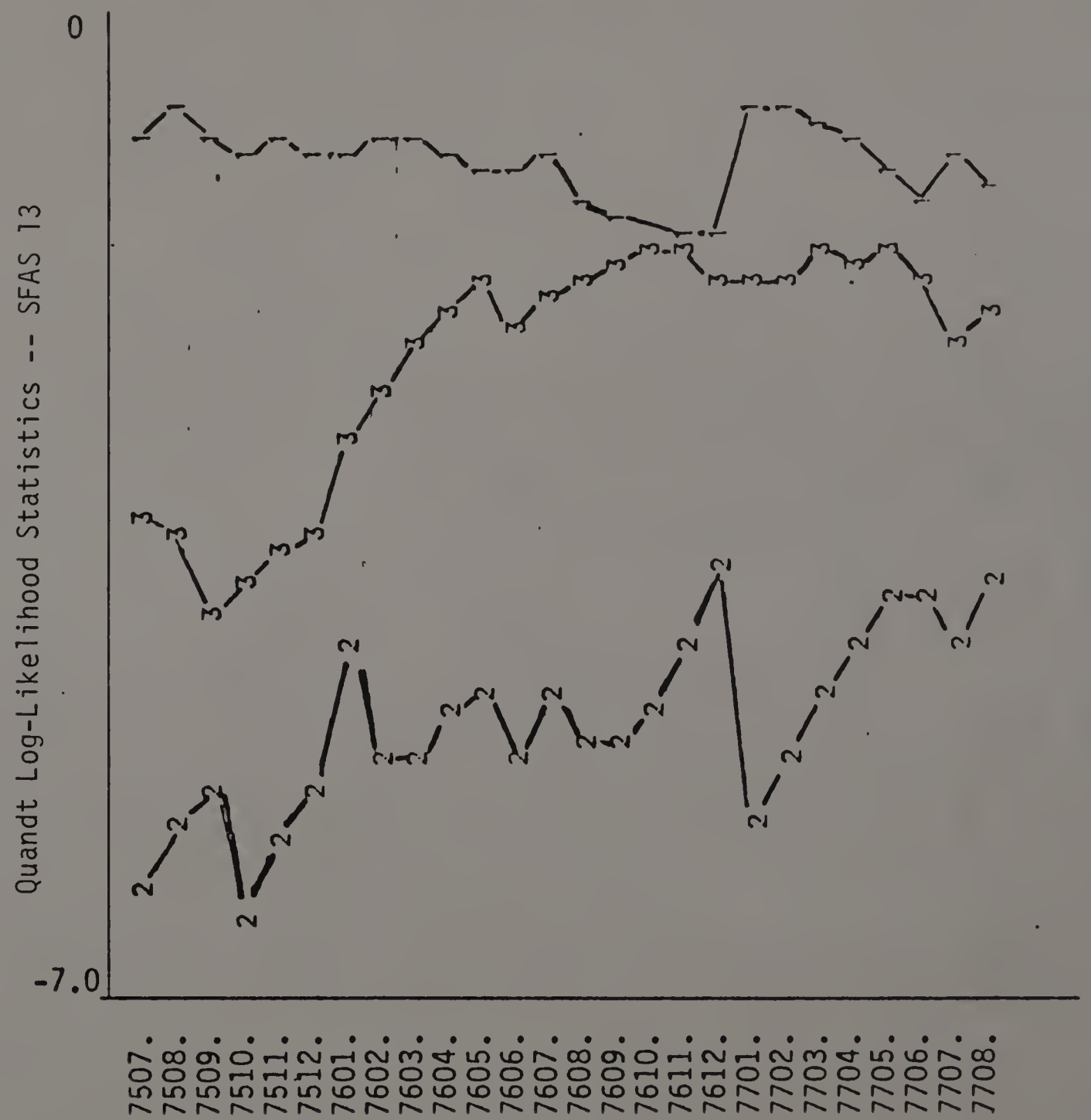
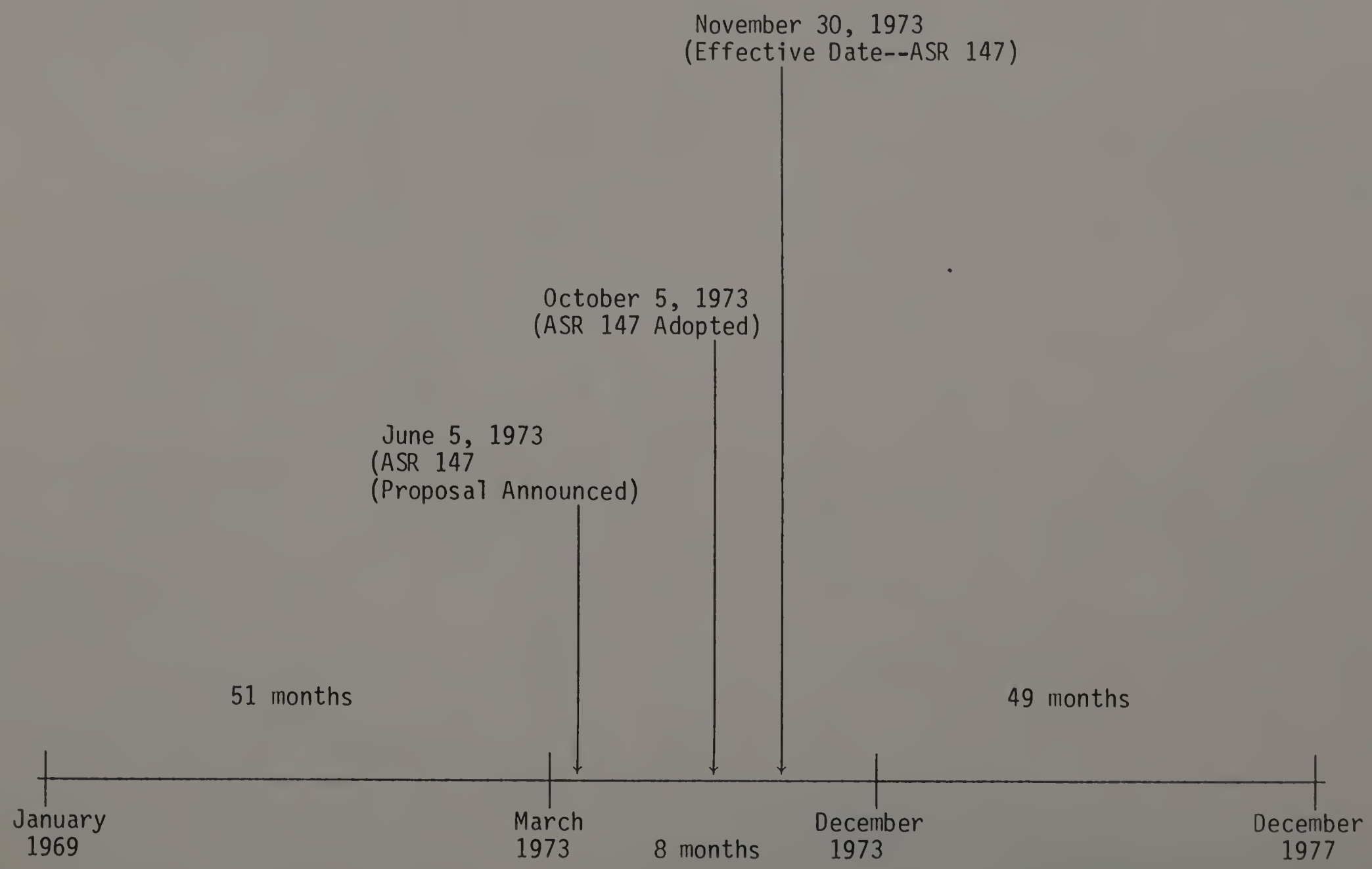


Figure 2



CHARACTERS	VARIABLES
1	QLOG--SP500
2	QLOG--CRSPVW
3	QLOG--CRSPEW

Figure 3 Critical Dates and Time Periods for ASR 147 Chow Tests



statistic centered around the September-October 1975 dates, which could be associated with the August 1975 release of the first exposure draft of SFAS 13. Because the sampling properties of the Quandt log-likelihood statistic, $^{\lambda}n_1$, are not well specified, the alternative method of the Chow test, as describeed earlier, was used to test for shifts in systematic risk. Since the most likely critical dates were unclear from the Quandt log-likelihood analysis for either the ASR 147 period or the SFAS 13 period, several test periods were adopted for the Chow tests and for the analysis of residuals.

Tests of Shifts in Systematic Risks

The Chow tests were done using residuals from the market model, as described earlier. Because of the uncertainty surrounding the exact location of a possible shift point in the systematic risk of affected firms, the time period selected for the Chow test on ASR 147 firms excluded an eight month central period beginning in April 1973, two months prior to the announcement of the proposed ASR 147 (June 6, 1973) and ending in November 1973, two months after the adoption of ASR 147 (October 5, 1973). The non-overlapping time periods used to test for a shift in systematic risk for the ASR 147 firms were January 1969 - March 1973 and December 1973 to December 1977. Figure 3 illustrates the time intervals and critical dates involved for the ASR 147 Chow tests.

The Chow tests on the SFAS 13 samples of firms were done using several time periods, because of the number of possible critical dates. The three test periods are presented in Table 8, and graphically in Figure 4.

For each test period a five month central period was eliminated.

Table 8

Test and Estimation Periods for SFAS 13 Chow Tests

Test Period	Pre-test Estimation Period	Post-Test Estimation Period
1	January 1972-June 1975	December 1975-December 1979
2	January 1972-March 1976	September 1976-December 1979
3	January 1972-July 1976	January 1977-December 1979

Test Period 1 excluded the August 26, 1975 date when the first exposure draft of SFAS 13 was issued. The central period excluded for Test Period 2, the July 22, 1976 date of the revised exposure draft, and for Test Period 3, the November 30, 1976 date of release for SFAS 13 in final form.

The specific operational hypotheses tested for each portfolio were:

ASR 147 samples:

H_0: $\beta_{1p} - \beta_{2p} = 0$

H_a: $\beta_{1p} - \beta_{2p} \neq 0$

where; $\beta_{1p} \equiv$ the portfolio beta for the pre-test sup-period

$\beta_{2p} \equiv$ the portfolio beta for the post-test sub-period

p = portfolio (either non-capitalizing or capitalizing)

SFAS 13 samples:

H_0: $\beta_{1p} - \beta_{2p} = 0$

H_a: $\beta_{1p} - \beta_{2p} \neq 0$

where: $\beta_{1p} \equiv$ the portfolio beta for the pre-test sub-period

$\beta_{2p} \equiv$ the portfolio beta for the post-test sub-period

p = portfolio (non-capitalizing, capitalizing or supplemental non-capitalizing)

For the SFAS 13 samples the hypotheses were tested for each of the three test periods identified and discussed earlier. The results of the tests of these hypotheses are summarized in Tables 9 and 10 for the ASR 147 samples and the SFAS 13 samples respectively.

Figure 4 Critical Dates and Test Periods for SFAS 13 Chow Tests

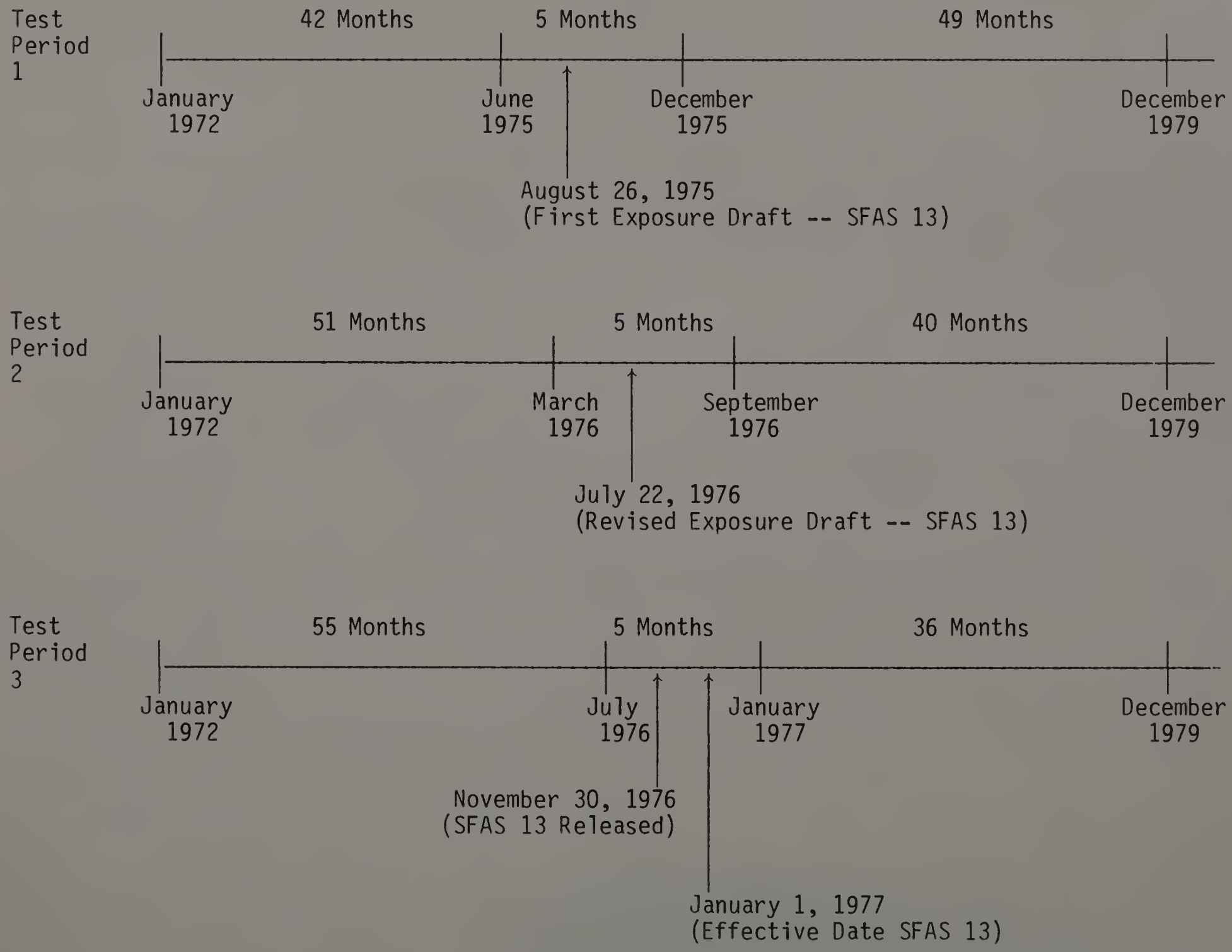


Table 9

ASR 147 Portfolio Chow Tests

Portfolio	SP Index $\hat{\beta}_1$	SP Index $\hat{\beta}_2$	SP Index Change	SP Index Chow Statistic	VW Index $\hat{\beta}_1$	VW Index $\hat{\beta}_2$	VW Index Change	VW Index Chow Statistic	EW Index $\hat{\beta}_1$	EW Index $\hat{\beta}_2$	EW Index Change	EW Index Chow Statistic
Noncapitalizing	1.32	1.18	-.14	.38	1.50	1.10	-.40	4.03*	1.24	1.03	-.21	7.35**
Capitalizing	1.22	1.36	+.14	.46	1.35	1.18	-.17	.79	1.10	1.09	-.01	.005

*Significant at .05 level of significance ** Significant at .01 level of significance

Critical $F^1_{60} = 4.00$

Table 10

SFAS 13 Portfolio Chow Tests

Portfolio	SP Index $\hat{\beta}_1$	SP Index $\hat{\beta}_2$	SP Index Change	SP Index Chow Statistic	VW Index $\hat{\beta}_1$	VW Index $\hat{\beta}_2$	VW Index Change	VW Index Chow Statistic	EW Index $\hat{\beta}_1$	EW Index $\hat{\beta}_2$	EW Index Change	EW Index Chow Statistic
Test Period 1												
Noncapitalizing	1.53	1.43	-.10	.12	1.33	1.10	+.27	1.21	1.18	1.31	+.13	1.98
Capitalizing	1.51	1.90	-.11	.16	1.35	1.45	+.10	.21	1.16	1.23	+.07	.75
Supplemental	1.46	1.14	-.32	1.86	1.23	1.25	+.02	.01	1.10	.98	-.12	2.45
Test Period 2												
Noncapitalizing	1.52	1.31	-.21	.49	1.33	1.57	+.24	.91	1.18	1.30	+.12	1.36
Capitalizing	1.54	1.26	-.28	.92	1.35	1.40	+.05	.03	1.20	1.17	-.03	.09
Supplemental	1.42	1.05	-.38	2.18	1.23	1.21	-.02	.01	.96	1.04	+.08	1.86
Test Period 3												
Noncapitalizing	1.50	1.31	-.19	.33	1.57	1.40	-.17	.92	1.18	1.31	+.13	1.57
Capitalizing	1.50	1.25	-.25	.70	1.34	1.36	+.02	.00	1.19	1.15	-.04	.23
Supplemental	1.39	1.08	-.31	1.43	1.22	1.23	+.01	.00	1.08	.97	-.11	1.31

Critical $F^{1}_{60} = 4.00$

As indicated, the results suggest a significant decrease in the portfolio beta for the non-capitalizing firms in the ASR 147 sample where the Chow tests employed the CRSP Value-Weighted and CRSP Equal-Weighted indices, while no such significant decrease was found for the capitalizing firms in the ASR 147 sample. While the null hypothesis is rejected for the experimental firms, the direction of the shift in the portfolio beta is the opposite of what would have been hypothesized based upon the nature of the disclosure required by ASR 147. In particular, since ASR 147 required supplemental disclosure of information on the present value of non-capitalized leases, one might expect an increase in the systematic risk of firms not capitalizing their lease commitments if the disclosures contained information that was unavailable from alternative sources, such as financial analysts and if the disclosures indicated a relatively higher amount of "debt" in those firms capital structures. Although the direction of the shift in portfolio beta makes these results difficult to interpret, several explanations are possible. First, because of the relatively small size of the ASR 147 sample and because of the inability to fully control for intervening events that may confound the results, it is possible these shifts in portfolio beta may be coincidental but not related to the ASR 147 lease disclosure policy decision. Second, the significant negative shift in the portfolio beta may be related to actions taken by firms to alter their capital structures as a result of the required disclosures, although the results cited in Chapter IV do not support this hypothesis for the ASR 147 firms. Finally, it is possible that information from alternative sources such as financial analysts may have over-estimated the effect of leasing on the capital structures of the ASR 147 non-capitalizing firms.

The results of the hypothesis tests on the SFAS 13 samples of firms are more clear. The null hypothesis was not rejected for any of the samples over any of the three time periods studied for any of the indices used. These results indicate no significant shifts in the portfolio betas for the samples of firms affected by the SFAS 13 ruling. This evidence is consistent with the general hypothesis that the required disclosures under SFAS 13 contained no new information previously unavailable, and is consistent with the general conclusions of other studies of SFAS 13 issue (Abdel-Khalik et al. [1981], Finnerty, Fitzsimmons and Oliver [1980]).

While analysis of the effects of these accounting standards, ASR 147 and SFAS 13, at the portfolio level for affected firms is of interest, a related question of importance is the effects of the standards on individual firms. Chow tests were done on each individual firm in the ASR 147 samples and the results are summarized in Table 11. Similarly, Chow tests were done for the firms in the SFAS 13 samples and the results are summarized in Table 12. The hypotheses tested were analogous to those discussed earlier for portfolio betas, except that the dependent variables were the individual securities' betas. More detailed results are presented in Tables 31 and 32 in the Appendix for the ASR 147 firms and Tables 33 - 41 in the Appendix.

The results of the Chow tests on individual firms' beta coefficients give some indication of possible effects of ASR 147 and SFAS 13 on the systematic risk of firms affected by those changes. For the ASR 147 samples there were more statistically significant shifts in beta for the non-capitalizing group of firms than for the capitalizing group, and this result was consistent for all of the indices, Standard and Poor's (SP), CRSP

Table 11

Summary of Chow Tests -- ASR 147 Firms

Sample	Market Index Used	Number of Firms	Changes in Beta: Average	Changes in Beta: Number of Positive	Changes in Beta: Number of Negative	Statistically Significant Changes in Beta: Total	Statistically Significant Changes in Beta: Positive	Statistically Significant Changes in Beta: Negative
Noncapitalizing	SP	23	-.062	10	13	3	2	1
Noncapitalizing	VW	23	-.363	4	19	5	1	4
Noncapitalizing	EW	23	-.174	8	15	4	2	2
Capitalizing	SP	23	+.164	14	9	2	2	0
Capitalizing	VW	23	-.174	11	12	2	0	2
Capitalizing	EW	23	-.027	12	11	2	1	1

Table 12

Summary of Chow Tests -- SFAS 13 Firms

Sample	MARKET Index Used	Number of Firms	Changes in Beta: Average	Changes in Beta: Number of Positive	Changes in Beta: Number of Negative	Statistically Significant Changes in Beta: Total	Statistically Significant Changes in Beta: Positive	Statistically Significant Changes in Beta: Negative
Time Period 1								
Noncapitalizing	SP	46	+.015	22	24	1	0	1
Noncapitalizing	VW	46	+.361	35	11	4	3	1
Noncapitalizing	EW	46	+.241	33	13	7	6	1
Capitalizing	SP	46	-.085	22	24	1	0	1
Capitalizing	VW	46	-.124	29	17	0	0	0
Capitalizing	EW	46	+.090	31	15	2	2	0
Supplemental	SP	60	-.339	19	42	10	1	9
Supplemental	VW	60	+.001	25	35	7	4	3
Supplemental	EW	60	-.080	19	41	12	3	9
Time Period 2								
Noncapitalizing	SP	46	-.099	21	25	2	0	2
Noncapitalizing	VW	46	+.318	32	14	4	3	1
Noncapitalizing	EW	46	+.193	32	14	5	4	1
Capitalizing	SP	46	-.257	15	31	1	0	1
Capitalizing	VW	46	+.066	23	23	1	1	0
Capitalizing	EW	46	-.022	26	20	2	1	1
Supplemental	SP	60	-.293	15	45	4	0	4
Supplemental	VW	60	-.019	25	35	3	2	1
Supplemental	EW	60	-.113	21	39	5	1	4
Time Period 3								
Noncapitalizing	SP	46	-.097	20	26	1	0	1
Noncapitalizing	VW	46	+.299	29	17	4	3	1
Noncapitalizing	EW	46	+.193	29	17	5	4	1
Capitalizing	SP	46	-.235	17	29	1	0	1
Capitalizing	VW	46	+.035	21	25	1	1	0
Capitalizing	EW	46	-.007	23	23	0	0	0
Supplemental	SP	60	-.288	19	41	5	0	5
Supplemental	VW	60	+.022	28	32	3	2	1
Supplemental	EW	60	-.044	23	37	6	2	4

Value-Weighted (VW) and CRSP Equal-Weighted (EW), that were used.[22] In addition, there were more significant changes within the non-capitalizing group for the VW and EW indices, which is consistent with the portfolio level results discussed earlier.[23]

With the SFAS 13 set of samples, it may again be noted that the non-capitalizing sample had a larger number of significant shifts in systematic risk than the capitalizing sample. This finding is relatively consistent across the three time periods tested although the results appear more dramatic in the first time period, which defined January 1972 to June 1975 as the pre-event period and December 1975 to December 1979 as the post-event period and was centered around the first exposure draft of SFAS 13 as its critical event. In addition, the supplemental sample of non-capitalizing firms, added for purposes of comparison of these results with other studies showed a higher percentage of significant risk shifts than the capitalizing control sample. Both samples of non-capitalizing firms therefore had relatively higher numbers of firms with shifts in systematic risk than did the control sample of capitalizing firms, although analysis at the portfolio level did not indicate a significant shift in risk for either non-capitalizing portfolio sample.[24] Several other observations regarding these results are of interest. It may be noted that the results obtained using the SP index do not indicate as much difference between the non-capitalizing samples, the experimental sample and the supplemental samples, and the capitalizing control sample than do the results obtained using either the VW or EW index.[25] Finally, in comparing the results of the two non-capitalizing samples, it is interesting to note that while both samples have relatively higher percentages of significant risk shifts, the greater number are positive shifts for the original experimental sample, except

for tests using the SP index and the greater number were negative shifts for the supplemental sample, except for tests using the VW index.

These findings are interesting and to some extent ambiguous, raising further empirical questions. Further discussion and interpretation of these findings and their empirical implications is deferred to the end of this chapter following the presentation of results from the analysis of residuals.

Analysis of Residuals

Analysis of residuals was performed in order to detect any aggregate abnormal price reaction to the critical events associated with ASR 147 and SFAS 13 in protfolios of securities affected by those accounting standards. This portion of the research was done using portfolio returns for the two groups of samples, the ASR 147 experimental and control samples and the SFAS 13 experimental and control samples.[26] For each portfolio a regression using the market model was run to estimate the parameters. The form of the model as discussed in the previous section is:

$$WR_{pt} = \alpha_p + \beta_p(WR_{mt}) + \varepsilon_{pt} \qquad (12)$$

where:

α_p and β_p are parameters of the model

ε_{pt} is the random disturbance for time period t

WR_{pt} is the wealth relative return at time t on portfolio p

ASR 147 experimental

ASR 147 control

SFAS 13 experimental

SFAS 13 control

WR_{mt} is the wealth relative return at time t on the market index.[27]

The critical dates of interest for this part of the study were:

ASR 147:

1) June 6, 1973 (Announcement of proposal)
2) October 5, 1973 (Adoption of proposal)

SFAS 13:

1) August 26, 1975 (First exposure draft)
2) July 22, 1976 (Second exposure draft)
3) December 2, 1976 (SFAS 13 announced).[28]

The study was done using daily data and the estimation period associated with each event excluded at least a twenty trading day period prior to the critical date.[29] For each critical date an estimation period of at least one year was used. A pre-event period of twenty days and a post-event period of twenty days were defined. Table 13 presents the estimation period, pre-event and post-event periods for each critical event. Tests were then done using two periods for each event, a forty day period including the pre-event and post-event periods and a twenty day post-event period.

A predicted return for each portfolio was generated by:

$$WR_{pt} = \hat{\alpha}_p + \hat{\beta}_p (WR_{mt}) \qquad (13)$$

A residual was calculated for each time period t and each portfolio by:

$$\hat{\varepsilon}_{pt} = WR_{pt} - \hat{WR}_{pt} \qquad (14)$$

Thus, for each test period associated with a critical date the following difference scores were calculated:[30]

$$d_{t,ASR\ 147} = \hat{\varepsilon}_{AN,t} - \hat{\varepsilon}_{AC,t} \qquad t = 1,...20 \quad t = 1,...40 \qquad (15)$$

where: AN ≡ ASR 147 Non-capitalizing portfolio

AC ≡ ASR 147 Capitalizing portfolio

and

$$d_{t,SFAS\ 13} = \hat{\varepsilon}_{SN,t} - \hat{\varepsilon}_{SC,t} \qquad t = 1,...20 \quad t = 1,...40 \qquad (16)$$

where: SN ≡ SFAS 13 Non-capitalizing portfolio

SC ≡ SFAS 13 Capitalizing portfolio.

Table 13

Critical Events, Estimation Periods and Test Periods

ASR 147

Event	Estimation Period	Pre-event Period	Post-event Period
Proposal Announced	May 1, 1972-April 30, 1973	May 8-June 5, 1973	June 7-July 7, 1973
Proposal Adopted	May 1, 1972-April 30, 1973	September 7-October 4, 1973	October 6-November 1, 1973

SFAS 13

Event	Estimation Period	Pre-event Period	Post-event Period
1st Exposure Draft	June 3, 1974-July 28, 1975	July 29-August 25, 1975	August 27-September 24, 1975
2nd Exposure Draft	June 3, 1974-May 30, 1976	June 23-July 21, 1976	July 23-August 19, 1976
SFAS 13 Announced	June 3, 1974-May 30, 1976	October 29-December 2, 1976	December 5-December 29, 1976

The differences scores, d_t, were tested using the non-parametric Wilcoxon matched-pairs signed-rank test. The purpose of this procedure is to test for a zero median of the differences between the two matched groups. Tests were done on the difference scores between the residuals because this procedure introduces a partial control for other events that may have affected the level of security returns for the firms included in these samples. In addition, the test does not assume that the difference scores, d_t, are identically distributed in successive weeks nor does it assume that the residuals of the matched samples, the variables being compared, are uncorrelated with one another. Because of the lack of restrictive assumptions, this represents a versatile and useful statistical tool for assessing a difference in the median level of risk-adjusted returns for the two groups.

The propositions being tested are:

1) For the ASR 147 matched samples, there is no difference in the median level of risk-adjusted returns for the two matched samples, non-capitalizing firms and capitalizings firms, surrounding either of the two ASR 147 critical dates, the release of the proposal or the acceptance of the proposal, and
2) For the SFAS 13 matched samples, there is no difference in the median level of risk adjusted returns for the two matched samples, non-capitalizing and capitalizing firms, surrounding any of the three SFAS 13 critical dates, the first exposure draft, the second exposure draft or the announcement of SFAS 13.

The test statistic for the Wilcoxon matched-pairs signed-ranks test is derived by ranking each difference score, d_t, by its absolute value,

then reassigning a positive or negative sign to the ranks of the differences In developing hypotheses to be tested, consideration was given to the perceived negative effects on non-capitalizing firms of the two accounting standards, and null and alternative hypotheses based upon one-tailed tests were developed.

For each set of samples, ASR 147 and SFAS 13, and for each critical event, using each of the three indices, SP, VW and EW:

$$H_0 : T_N = \tfrac{1}{2}\left[\frac{N(N+1)}{2}\right]$$

$$H_a : T_N > \tfrac{1}{2}\left[\frac{N(N+1)}{2}\right]$$

where: $T_N \equiv$ the summation of the negatively signed ranks

$N \equiv$ the number of observations (difference scores); 20 for the post-event only period and 40 for the pre-event and post-event period

$\frac{1}{2}\left[\frac{N(N+1)}{2}\right] \equiv$ one half of the sum of all of the ranks, which is the expected value of T_N if the ranks are equally and randomly divided between positive and negative differences;

$\frac{1}{2}\left[\frac{N(N+1)}{2}\right] = 105 \ (N = 20)$

$= 410 \ (N = 40)$

Table 14 presents a summary of the tests of the hypotheses.[31]

As a final control procedure, the Ordinary Least Squares estimates of beta for the portfolios were replaced with an alternative estimator of beta as suggested by Dimson [1979] and by Roll [1981]. The estimator is a method of addressing the question of bias in beta estimates when shares are traded infrequently.[32] Roll suggests this bias may be particularly

Table 14

Summary of Wilcoxon Matched-Pairs Signed-Rank Tests

ASR 147 -- Wilcoxon T-statistics (Significance Level)

	SP		VW		EW	
Critical Event	40 day Pre and Post	20 day Post only	40 day Pre and Post	20 day Post only	40 day Pre and Post	20 day Post only
Proposal Announcement (June 6, 1973)	507 (.10)	119 (.30)	511 (.09)	120 (.29)	553 (.03)	118 (.31)
Proposal Adopted	429 (.40)	127 (.20)	396 (.57)	125 (.23)	364 (.77)	145 (.07)

SFAS 13 -- Wilcoxon T-statistics (Significance Level)

1st Exposure Draft (August 26, 1975)	491 (.14)	128 (.20)	493 (.13)	129 (.19)	515 (.08)	(132 (.16)
2nd Exposure Draft (July 22, 1976)	442 (.33)	105 (.50)	443 (.33)	106 (.49)	452 (.28)	111 (.41)
SFAS 13 Announcement (November 30, 1976)	309 (.91)	71 (.90)	308 (.92)	70 (.90)	309 (.91)	71 (.90)

troublesome for beta estimates based upon daily data. The estimator developed by Dimson is developed from the inclusion of leading and lagging market indicators as variables in a multiple regression and summing the coefficients:

$$\hat{\beta}_{Dimson} = \sum_{k=-n_1}^{n_2} \hat{\beta}_k \qquad (24)$$

where n_1 is the number of lagged terms, and

n_2 is the number of leading terms included in the multiple regression.

The results for the tests of the hypotheses using the Dimson estimator of beta are summarized in Table 43. Table 44 presents the OLS and Dimson estimators of beta for the various portfolios and estimation periods.[33]

Using a .05 level of significance it was possible to reject the null hypothesis of no difference between the median level of risk adjusted returns between the ASR 147 experimental and control groups only for the announcement of the ASR 147 proposal on June 6, 1973, and this result held only for the residuals estimated using the CRSP EW index, and for the 40 day pre-event and post-event period, but not for the 20 day post event period. Rejection of the null hypothesis was not possible for the periods associated with adoption of ASR 147 on October 5, 1973. The Wilcoxon tests on residuals estimated using the Dimson method did not permit the rejection of the null hypothesis for either event using any of the indices or either the 40 day pre-event and post-event or the 20 day post-event period.

Using the .05 level of significance, the null hypothesis of no difference in residuals between the SFAS 13 experimental and control samples could not be rejected for any of these critical events, the first exposure draft, the second exposure draft or the announcement of SFAS 13 in final form,

using any of the three indices. The results using Dimson estimators of beta to generate residuals were essentially parallel to those obtained using OLS estimators.

Summary and Discussion of Results

The results presented in this chapter do not give a strong indication of a market reaction at the aggregate level to either the SEC's ASR 147 or the FASB's SFAS 13 on leasing. There was some indication of a statistically significant decrease in risk for the ASR 147 experimental group, but not for the control group. It is possible that this could be associated with changes in financing and leasing decisions of this group of firms, over a period of several years, since the change in risk for the portfolio is measured over several years. However, this is not consistent with the results presented in Chapter IV which found no significantly different changes in financing or leasing variables for this group of firms as compared to the control samples. Hence this result must be held as tentative in that it is possible that it could have resulted from other unspecified causes.[34] No significant shifts in risk were found for the SFAS 13 samples used, at the aggregate level. This result is consistent with other studies in this area [Abdel-Khalik, et al. (1981) and Finnerty, Fitzsimmons and Oliver (1980)]. However, analysis, at the individual firm level, of significant risk shifts did seem to indicate less stability in risk for many of the firms most affected by the pronouncements ASR 147 and SFAS 13, although the direction of the shifts was not consistent. An analysis of the results at the individual firm level is of interest even without the finding of

a significant risk shift at the portfolio level. This issue and possible explanations of the significant shifts in risk are explored in the next chapter.

The findings regarding abnormal price effects for the portfolios of firms affected by the pronouncements do not indicate any significant difference between the experimental and control samples for the critical events under study at the aggregate level. However, again the aggregate level analyses may have masked effects for individual firms and analysis of individual firms' price reactions can be further explored to see if reasons exist for a market reaction for certain individual firms and not for others.

The aggregate level analyses of this chapter do not support the proposition of a market reaction to the accounting standards under study, ASR 147 and SFAS 13, at the portfolio level. However, the limited evidence of possible market reactions associated with individual firms merits further study. This research issue is pursued in the next chapter.

C H A P T E R V I

TESTS OF CROSS-SECTIONAL MODELS OF CAPITAL MARKET REACTION TO SFAS 13

The third research issue of importance to be considered in this study is the explanation of any observed abnormal market reaction. Although the evidence presented in the previous chapters gives little indication of a market reaction at the aggregate level, some evidence presented gave an indication of a market reaction for some of the firms in the experimental samples at the individual firm level of analysis. To explore this it will be useful to consider theories that might explain price declines or shifts in systematic risk associated with the accounting policy decisions. This will aid in the development of a model to explain why a capital market reaction was observed for some firms and not for others, as well as explain the differing magnitude of response across firms. The principal motivation for this research issue is to discuss possible explanations for capital market reaction which suggest variables to be included in an explanatory model for capital market reaction to lease accounting policy decisions. It is not the purpose of this research to distinguish among the several theories suggested. It should be noted that the theories suggested for the capital market reaction are neither mutually exclusive nor collectively exhaustive.

Abdel-Khalik et al. [1981] discuss a theory that could lead to an explanation of a market reaction associated with SFAS 13. They theory is based upon the congruency between financial statement users' true state

of knowledge about the cosmetic nature of the SFAS 13 mandated disclosures and the affected firms' managers beliefs about the users' state of knowledge. On this basis Abdel-Khalik et al. idenitfy two possible situations:

1) financial statement users understand that SFAS 13 lease capitalization is cosmetic in nature, and managers perceive that users' understand the cosmetic nature of lease capitalization;
2) financial statement users understand that SFAS 13 lease capitalization is cosmetic in nature, but managers perceive that users do not understand the cosmetic nature of lease capitalization.

These states are based on the assumption of an informationally efficient captial market, which does not necessarily imply that managers of all, or any, of the firms affected understand, accept or are even aware of the implciations of marekt efficiency. The contention that managers are unaware or unaccepting of market efficiency is supported by Mayer-Sommer [1979].

The implications of the a priori reasoning presented by Abdel-Khalik et al. are that managers may be motivated to initiate actions to mollify the apparent effects of SFAS 13. The variables suggested as important by their reasoning were the relative size of the off-balance sheet lease prior to SFAS 13, and the size of the firm, since firm size would affect the flexibility of management to act. They also suggest that management actions themselves, such as those taken to reduce financial leverage or the amount of leasing done might be a factor affecting market reaction.

Abdel-Khalik et al. also consider two other factors which might motivate managers to try to mollify the apparent effects of SFAS 13: the effects of lease capitalization on accounting measures used in debt covenants and bond indentures, and the effects of lease capitalization on the terms of

management incentive plans. Similar consideration is given to these issues by Collins, Rozeff and Dhaliwal [1980] in regard to another accounting issue. Collins, Rozeff and Dhaliwal discuss explanations of a capital market reaction to a mandatory change in accounting method, as prescribed by SFAS 19, in terms of four theories: a naive investor theory, a modified naive investor theory, a contracting cost theory based in agency theory [Jensen and Meckling, 1976] and an estimation risk theory [Klein and Bawa, 1976, 1977]. It is the latter two which are supported by their results, and will be presented here. In considering the contracting cost theory, it is assumed that the wealth-maximizing firm is not indifferent in the choice among accounting methods because of financial contracts and arrangements and because a chosen accounting method has a particular set of costs and benefits which may include effects on capital costs, legal costs and costs of providing competition with excess information. Leftwich [1979] also notes, under an agency theory approach that mandatory changes in accounting principles restrict the choices which management has, and, therefore may reduce expected future cash flows because of increased bonding and monitoring costs and by a reduction in wealth transfers from bondholders to stockholders. What Collins, Rozeff and Dhaliwal derive is that costs of potential violation of bond covenants lead to an abnormal price effect in those securities affected by the accounting change.

The second theory discussed by Collins, Rozeff and Dhaliwal is based upon the estimation risk theory of Klein and Bawa [1976, 1977]. At its base is the idea that increases in estimation risk about the CAPM parameters can lead to an increase in the discount rate applied to cash flows and a resulting decline in firm value. The CAPM ignores uncertainty about the

means and variances of asset returns. It is argued that with a restriction in the choice of accounting methods investors become less certain about the investments available to the firm and about which investments may be selected by the firms and about firms' future cash flows because of changes in financing policy. From this theory Collins, Rozeff and Dhaliwal derived the proposition that firms having debt covenants or management compensation plans denominated in terms of accounting numbers are more likely to have increased estimation risk and hence an abnormal price reaction.

In the context of SFAS 13, since debt covenants and bond indentures are frequently restrictive in terms of financial measurements such as debt to equity ratios and these ratios often use accounting information as defined by generally accpeted accounting principles, firms could incur costs or penalites associated with violation of those restrictions including, possibly technical default as a result of lease capitalization under SFAS 13. In addition, management compensation from incentive plans, if based on an accounting rate of return could be adversely affected by lease capitalization under SFAS 13, possibly motivating managers to try to mollify the effects of SFAS 13.

With respect to shifts in systematic risk the a priori reasoning presented by Abdel-Khalik et al. suggests that shifts in systematic risk may be associated with the size of the firm, the relative size of the affected firms noncapitalized leases prior to the SFAS 13 mandated capitalization, and managerial actions taken to mollify the effects of SFAS 13, such as action taken to reduce the amount of leasing done, and to reduce the amount of debt outstanding, such that apparent financial leverage ratios would not deteriorate as much as management may have feared. The

inclusion of these factors in explaining shifts in systematic risk is consistent with prior theoretical and empirical work by Bowman [1979] and Hamada [1972].

On the basis of the preceding discussion of theories, a priori reasoning, and prior research considering capital market reactions to accounting policy decisions in general and the lease accounting issue in particular, several factors are suggested for inclusion in a cross-sectional model to explain observed market reaction in firms affected by SFAS 13.[35] The factors will be discussed more fully in the next section. The factors included in the cross-sectional model of an abnormal price reaction are:

1) firm size,
2) the existence of debt or loan agreement covenants restricting further indebtedness or requiring the maintenance of certain ratios based on accounting numbers,
3) the existence of a management bonus or incentive plan based in whole or part on an accounting-based performance measure,
4) the amount of non-capitalized financial leases, prior to SFAS 13,
5) debt to equity ratio.

The reason for inclusion of the above factors is that, from prior research as well as theory and a priori reasoning these factors have been suggested as signals to market participants of possible management reaction to SFAS 13.

The factors included in the cross-sectional model of shifts in systematic risk are the same as discussed above, with the addition of the following:

1) changes in the amount of leasing undertaken,
2) changes in financial leverage.

These reflect, in part, the results of the possible managerial reaction to SFAS 13, as suggested by Abdel-Khalik, et al. [1981], and are suggested

by the a priori reasoning of Abdel-Khalik, et al. as important factors explaining market reaction, although they do not necessarily reflect the full range of possible managerial responses to mollify the apparent effects of SFAS 13.

Sample Firms, Variables and Methodology

Sample Firms

The cross-sectional regression models used in the analysis included the SFAS 13 experimental sample of firms and the supplemental sample of firms discussed earlier. These firms all had a substantial amount of noncapitalized leases prior to the initial exposure draft of SFAS 13 in August 1975. The SFAS 13 experimental sample consisted of 46 firms initially and the supplemental sample consisted of 60 firm initially, totalling 106 firms. As discussed earlier, because daily return data was unavailable for eight of the experiemental firms and for four of the supplemental firms, these companies were deleted for the cross-sectional regression model using abnormal returns as its dependent variable.[36] No firms were deleted for the model employing shifts in systematic risk as a dependent variable.

Dependent Variables

The two dependent variables discussed earlier to represent market reaction to the accounting policy decisions were abnormal price reaction and change in systematic risk. Operationally, the following definitions were used:

1) $CAR_j \equiv$ the cumulative abnormal (risk-adjusted) return for each individual firm for the thirty trading day period beginning 10 days before and ending 20 days after the date of the first exposure draft of SFAS 13, August 26, 1975.

$$CAR_j = \sum_{t=1}^{T} \hat{\varepsilon}_{jt} \quad t = 1...30 \qquad (25)$$

$$j = 94$$

The residuals, $\hat{\varepsilon}_{jt}$, were derived from the market model using daily data, discussed earlier (Equation 2, page 20) as follows:

$$\hat{\varepsilon}_{jt} = R_{jt} - \hat{R}_{jt} \qquad (26)$$

2) $\Delta\hat{\beta}_j \equiv$ the change in the estimated beta coefficient measuring systematic risk for an individual firm from the 42 month period ending June 1975, to the 49 month period after November 1975. This is Test Period 1 as discussed in Table 8 (page 72).[37]

Independent Variables

The definitions and measurement of the independent variables were as follows:

1) Firm Size (x_1),

   $x_1 \equiv$ Total assets of firm j in the year prior to the exposure draft (1974).

2) Debt or loan agreement or covenant (x_2), stated in terms of accounting numbers which would have been affected by lease capitalization and which existed prior to 1975,[38]

   $x_2 \equiv$ 1, if a debt covenant existed or

   0, if no debt covenant existed.

3) Management incentive or bonus plan (x_3), based upon performance measures which could be affected by lease capitalization and which existed piror to 1975.[39]

   $x_3 \equiv$ 1, if a bonus or incentive plan existed, or

   0, if no such plan existed.

4) The present value of non-capitalized financial leases for firm j in the year prior to the SFAS 13 exposure draft (x_4),[40]

x_4 ≡ Present Value of non-capitalized leases in the year prior to the exposure draft (1974).

5) Debt to Equity Ratio (x_5) of firm j in the year prior to the exposure draft (1974),

$$x_5 \equiv \frac{\text{Book Value of Debt \& Preferred Stock}}{\text{Market Value of Common Equity}}$$

6) Change in the debt to equity ratio (x_6) of firm j from the year prior to the exposure draft (1974) to the year subsequent to the exposure draft (1975),

$$x_6 \equiv \left[\frac{\text{Book Value of Debt \& Preferred Stock}}{\text{Market Value of Common Equity}}\right]_{+1} - \left[\frac{\text{Book Value of Debt \& Preferred Stock}}{\text{Market Value of Common Equity}}\right]_{0}$$

7) Percentage change in the amount of leasing (x_7) for firm j from the year prior to the exposure draft (1974) to the year subsequent (1975),

$$x_7 \equiv \frac{(\text{PV financing leases})_{+1} - (\text{PV financing leases})_0}{(\text{PV Financing Leases})_0}$$

Methodology

The methods tested were in the form of cross-sectional regression models:

$$CAR_j = \delta_0 + \delta_1 x_{1j} + \delta_2 x_{2j} + \delta_3 x_{3j} + \delta_4 x_{4j} + \delta_5 x_{5j} + \mu \quad (27)$$

$$\Delta\hat{\beta}_j = \delta_0 + \delta_1 x_{1j} + \delta_2 x_{2j} + \delta_3 x_{3j} + \delta_4 x_{4j} + \delta_5 x_{5j} + \delta_6 x_{6j} + \delta_7 x_{7j} + \mu \quad (28)$$

The coefficients δ_i were estimated using OLS regression.

Hypotheses and Discussion of Variables

For the CARj model (Equation 27) the following hypotheses are presented:

1) For the total assets (x_1) variable, discussion by Abdel-Khalik, et al. [1981] posits that larger firms have greater flexibility in their choices of actions taken in response to the mandatory accounting change, increasing the likelihood of actions taken in response to the change. Other authors [Ferrara, Thies and Dirsmith, 1979] have suggested that the management of larger firms perceive themselves as being less affected by lease capitalization than small firms. As a result of this ambiguity the hypotheses presented in non-directional:

$$H_0 : \quad \delta_1 = 0$$
$$H_a : \quad \delta_1 \neq 0$$

2) For the categorical variable indicating debt covenants (x_2), discussion by Abdel-Khalik, et al. and by Collins, Rozeff and Dhaliwal [1979] indicated that the existence of these agreements and the possible technical violation of these agreements because of lease capitalization would tend to increase the likelihood of management action in response to SFAS 13. Therefore, a negative relationship was hypothesized:

$$H_0 : \quad \delta_1 = 0$$
$$H_a : \quad \delta_2 < 0$$

3) For the categorical variable indicating the existence of a management compensation plan based upon performance measured by accounting number (x_3), discussion by Abdel-Khalik et al. posits that this factor could increase the likelihood of management response to SFAS 13. Hence a negative relationship is hypothesized.

$$H_0 : \delta_3 = 0$$

$$H_a : \delta_3 < 0$$

4) The present value of non-capitalized leases (x_4) in the year prior to the exposure draft is suggested by Abdel-Khalik et al. as increasing the likelihood of managerial response to SFAS 13 for firms with relatively high non-capitalized leases. As a result a negative relationship is hypothesized.

$$H_0 : \delta_4 = 0$$

$$H_a : \delta_4 < 0$$

5) The debt to equity ratio (x_5) in the year prior to the exposure draft, although not explicitly considered elsewhere is posited here as increasing the likelihood of managerial action in response to SFAS 13 for firms with relatively high debt to equity ratios prior to lease capitalization. A negative relationship is hypothesized.

$$H_0 : \delta_5 = 0$$

$$H_a : \delta_5 < 0$$

For the model to explain shifts in the estimated beta coefficient, Equation 28, the hypotheses were as follows:

1) For total assets (x_1), as noted earlier Abdel-Khalik et al. suggest that the management of larger firms have more flexibility to act in response to lease capitalization. Since actions taken to mollify the apparent effects of lease capitalization would be to reduce debt outstanding the hypothesized relationship is negative in this case.

$$H_0 : \delta_1 = 0$$

$$H_a : \delta_1 < 0$$

2) For the categorical variable representing debt covenants (x_2), the a priori reasoning and evidence presented by other authors, as noted earlier, indicates a greater likelihood of management action to mollify the effects of lease capitalization; therefore, a negative relationship is hypothesized.

$$H_0 : \delta_2 = 0$$
$$H_a : \delta_2 < 0$$

3) For the categorical variable representing the existence of management incentive on bonus plans (x_3), the previously noted discussion by Abdel-Khalik et al. and others indicates an increased likelihood of management action to mollify the effects of lease capitalization; therefore, a negative relationship is hypothesized.

$$H_0 : \delta_3 = 0$$
$$H_a : \delta_3 < 0$$

4) The present value of non-capitalized leases (x_4) in the year prior to the exposure draft is suggested by Abdel-Khalik et al., as noted before, as a factor increasing the likelihood of management action to mollify the effects of lease capitalization. A negative relationship therefore is hypothesized.

$$H_0 : \delta_4 = 0$$
$$H_a : \delta_4 < 0$$

5) The debt to equity ratio (x_5) is used as a proxy to measure the firms financial leverage. Evidence presented by several authors [Hamada, 1972; Bowman, 1979] suggests a positive relationship between financial leverage and systematic risk. Information reflected in the debt to equity ratio could reflect prior

changes in financial leverage which are not necessarily related to the issue of lease capitalization. The debt to equity ratio could also indicate a greater likelihood of management action in response to lease capitalization. The hypotheses in this case is presented as non-directional.

$$H_0 : \delta_5 = 0$$

$$H_a : \delta_5 \neq 0$$

6) Changes in financial leverage (x_6) represent in part a measurement of a change in a financing decision of the firm. As noted earlier, much theoretical and empirical work [Bowman, 1979, 1980; Hamada, 1972] suggests that financial leverage and systematic risk are positively related. The relationship is therefore hypothesized to be positive.

$$H_0 : \delta_6 = 0$$

$$H_a : \delta_6 > 0$$

7) The percentage change in the amount of leasing (x_7) represents in part a measure of financing decisions or changes in financing decisions. Since empirical work by Bowman [1980] has suggested that non-capitalized lease information is impounded in measures of systematic risk, the relationship of changes in leasing to changes in measured systematic risk is hypothesized to be positive.

$$H_0 : \delta_7 = 0$$

$$H_a : \delta_7 > 0$$

This section has presented a series of hypotheses about the relationships of the various independent variables and the two dependent variables in the cross-sectional models, as well as a discussion of the a priori reasoning and previous research that suggested those hypotheses. The following section discusses the results of tests of those hypotheses.

Results

CAR_j Model

The results of the OLS regression model for the CAR_j variable, described in Equation 27, to explain any abnormal market reaction to the first exposure draft are presented in Table 15. As before, in order to assess the sensitivity of the results to the choice of market index, CARs were estimated for each firm using the market model and each of three indices to proxy for the market portfolio, the Standard and Poor's 500 (SP) Index, the CRSP Value-Weighted (VW) Index and the CRSP Equal-Weighted (EW) Index. The results presented in Table 15 do not permit the rejection of the null hypothesis for the regressions as a group:

$$H_0 : \delta_0 = \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = 0.$$

That is, the regressors as a group do not differ significantly from zero in the cross-sectional explanatory model for the OLS estimated CARs. The adjusted R^2 further indicates the low explanatory power of the model, less than .03 in the regression. The results were essentially parallel regardless of the choice of market index used in the OLS estimation of CARs in this model. Examination of the individual parameter estimates indicates that, although the sign of the estimated parameter was in the hypothesized direction for all of the estimated parameters, they were not significantly different from zero, with the exception of the constant term and the coefficient of the debt to equity ratio. The following null hypotheses, therefore could not be rejected:

$$H_0 : \delta_1 = 0,$$
$$H_0 : \delta_2 = 0,$$
$$H_0 : \delta_3 = 0,$$
$$H_0 : \delta_4 = 0.$$

TABLE 15

OLS Estimated CARj Model -- SFAS 13 (First Exposure Draft) -- Test Period 1

	Estimated Parameters (t statistics)								
Hypothesized Sign:	(?)	(?)	(-)	(-)	(-)	(-)			
Market Index Used	$\hat{\delta}_0$ Constant	$\hat{\delta}_1$ Total Assets	$\hat{\delta}_2$ Debt Covenant	$\hat{\delta}_3$ Incentive Plan	$\hat{\delta}_4$ Noncapitalized Leases	$\hat{\delta}_5$ Debt/Equity Ratio	R^2	Corrected R^2	F Statistic
SP	.1079 (2.19)*	-.0000 (-.16)	-.036 (-.16)	-.0135 (.60)	-.0000 (-.04)	-.2134 (-2.41)*	.079	.026	1.50
VW	.1150 (2.33)*	-.0000 (-.13)	-.0019 (-.08)	-.0142 (-.64)	-.0000 (-.07)	-.2152 (-2.43)*	.079	.027	1.52
EW	.1517 (2.99)*	-.0000 (-.19)	.0076 (.32)	-.0193 (-.84)	-.0000 (-.08)	-.2045 (-2.24)*	.072	.019	1.36

* Significant at .05 (two-tailed test)

The null hypotheses concerning debt to equity ratio could be rejected in favor of the alternative:

$$H_a : \delta_5 < 0.$$

Table 16 presents results from similar tests using CARs obtained using the Dimson method discussed in Chapter V (Equation 24). The results presented in Table 16 are similar to the results obtained with the OLS estimation of the CARs, with the identical rejections or acceptances of the null hypotheses. Tables 17 and 18 present similar tests for the period surrounding the second exposure draft of SFAS 13 issued in July 1976.[41] The results presented for the CAR model in this second test period indicate even lower R^2 and corrected R^2 statistics and, as before, none of the tests of the hypothesis that the regressors, as a group, have explanatory power were significant. In addition, none of the individual coefficients tested individually were significant with the sole exception of the coefficient of non-capitalized leases using the VW index and the Dimson estimation method for the CARs.

The inferences that can be made from the results presented in this section are generally consistent with those presented in other studies of SFAS 13 on leases. The results of the Abdel-Khalik et al. study found, in general, no significantly lower abnormal returns for companies affected by the SFAS 13 lease accounting standard, even with consideration of firm size, the amount of non-capitalized leases and managerial actions as partitioning variables in their samples. The results presented here lead to similar conclusions, employing a different methodological approach. Furthermore, the results present herein were obtained using different indices as proxies for the market portfolio in estimating the CARs as well as the Dimson estimation technique for the CARs in addition to the OLS estimation procedure. The results proved insensitive, in this case,

TABLE 16

Dimson Estimated CARj Model -- SFAS 13 (First Exposure Draft) -- Test Period 1

Index Used	Estimated Parameters (t statistics) $\hat{\delta}_0$ Constant	$\hat{\delta}_1$ Total Assets	$\hat{\delta}_2$ Debt Covenant	$\hat{\delta}_3$ Incentive Plan	$\hat{\delta}_4$ Noncapitalized Leases	$\hat{\delta}_5$ Debt/Equity Ratio	R^2	Corrected R^2	F Statistic
Hypothesized Sign:	(?)	(?)	(-)	(-)	(-)	(-)			
SP	.1014 (2.13)*	.0000 (.33)	-.0101 (-.46)	-.0108 (-.50)	-.001 (-.95)	-.1947 (-2.28)*	.089	.037	1.72
VW	.1126 (2.37)*	.0000 (.137)	-.0060 (-.27)	-.0119 (-.55)	-.0001 (-1.50)	-.1709 (-2.00)*	.091	.039	1.76
EW	.1421 (2.96)*	.0000 (.28)	-.0017 (-.07)	-.147 (-.68)	-.0001 (-1.03)	-.1844 (2.13)*	.082	.030	1.57

* Significant at .05 (two-tailed test)

TABLE 17

OLS Estimated CARJ Model -- SFAS 13 (Second Exposure Draft) -- Test Period 2

Market Index Used	Estimated Parameters (t statistics) $\hat{\delta}_0$ Constant	$\hat{\delta}_1$ Total Assets	$\hat{\delta}_2$ Debt Covenant	$\hat{\delta}_3$ Incentive Plan	$\hat{\delta}_4$ Noncapitalized Leases	$\hat{\delta}_5$ Debt/Equity Ratio	R^2	Corrected R^2	F Statistics
Hypothesized Sign:	(?)	(?)	(-)	(-)	(-)	(-)			
SP	-.0651	.0000	.0048	-.0187	-.0001	.0744	.038	-.016	.70
	(-1.46)	(1.16)	(.23)	(-.92)	(-1.10)	(.94)			
VW	-.0619	.0000	.0054	-.0191	-.0001	.0738	.039	-.016	.71
	(-1.39)	(1.16)	(.26)	(-.93)	(-1.11)	(.93)			
EW	-.0296	.0000	.0129	-.0232	-.0001	.0829	.044	-.010	.82
	(-.65)	(1.07)	(.60)	(-1.11)	(-1.07)	(1.03)			

* Significant at .05 (two-tailed test)

TABLE 18

Dimson Estimated CARj Model -- SFAS 13 (Second Exposure Draft) -- Test Period 2

	Estimated Parameters (t statistics)								
Hypothesized Sign:	(?)	(?)	(-)	(-)	(-)	(-)			
Market Index Used	$\hat{\delta}_0$ Constant	$\hat{\delta}_1$ Total Assets	$\hat{\delta}_2$ Debt Covenant	$\hat{\delta}_3$ Incentive Plan	$\hat{\delta}_4$ Noncapitalized Leases	$\hat{\delta}_5$ Debt/Equity Ratio	R^2	Corrected R^2	F Statistic
SP	-.0701 (-1.54)	.0000 (1.37)	-.0005 (-.02)	-.0108 (-.52)	-.0001 (-1.66)	.0823 (1.02)	.050	-.004	.92
VW	-.0586 (-1.23)	.0000 (1.34)	.0029 (.13)	-.0112 (-.52)	-.0002 (-2.08)*	.0980 (1.16)	.067	.014	1.25
EW	-.0351 (-.76)	.0000 (1.33)	.0068 (.31)	-.0141 (-.67)	-.0002 (-1.71)	.0913 (1.12)	.055	.001	1.02

* Significant at .05 (two-tailed test)

to the different choice of estimation method for the CARs.[42]

In explaining the results, a conclusion that could be suggested is that the market did efficiently impound information related to non-capitalized leases prior to SFAS 13 and in aggregate did not perceive leasing companies as being adversely affected by SFAS 13, nor did the market anticipate managerial actions adversely affecting these companies. Confounding this conclusion is the fact that accounting policy decisions most often do not occur instantaneously, but rather take shape over a period as long as several years. In the context of other accounting policy decisions, in particular SFAS 33, a multiple events perspective has been suggested [Sepe, 1982]. Although methodology in this area is quite new, this represents a possible avenue of further research.

$\Delta\hat{\beta}_j$ Model

The results of the cross-sectional OLS regression for the $\Delta\hat{\beta}_j$ model, described in Equation 28 to explain shifts in estimated beta coefficients of firms affected by SFAS 13 in the period surrounding the first exposure draft are presented in Table 19. In contrast to the CAR model for which no tests had been performed on the CARs for individual firms, Chow tests were performed for the individual firms to test for significant shifts in the beta coefficient. The results of those tests, presented in Table 12 of Chapter V and discussed therein, were consistent with an hypothesis of market reaction to SFAS 13 in terms of shifts in systematic risk for some individual firms affected by SFAS 13.

The results presented in Table 19 indicate that at the .05 level of significance, the null hypothesis that the regressors as a group have no effect on the dependent variable, $\Delta\hat{\beta}$, in favor of the alternative hypothesis:

TABLE 19

Estimated $\Delta\hat{\beta}_j$ Model -- SFAS 13 (First Exposure Draft) -- Test Period 1

Market Index Used	Constant	Total Assets	Debt Covenant	Incentive Plan	Noncapitalized Leases	Debt/Equity Ratio	Change in DE Ratio	Change in Leases	R^2	Corrected R^2	F Statistics
Hypothesized Sign:	(?)	(-)	(-)	(-)	(-)	(?)	(+)	(+)			
	$\hat{\delta}_0$	$\hat{\delta}_1$	$\hat{\delta}_2$	$\hat{\delta}_3$	$\hat{\delta}_4$	$\hat{\delta}_5$	$\hat{\delta}_6$	$\hat{\delta}_7$			
	Estimated Parameters (t statistics)										
SP	-.2972	.0001	.0297	.0854	-.0012	.4077	2.1584	.6418	.164	.105	2.75*
	(-1.23)	(1.42)	(.26)	(.74)	(-2.02)*	(1.25)	(3.36)**	(.49)			
VW	-.1386	.0000	.1954	.0061	-.0014	.5589	1.9409	.2500	.196	.138	3.41**
	(-.56)	(.58)	(1.65)	(.05)	(-2.34)*	(1.69)	(2.97)**	(.19)			
EW	-.2220	.0000	.1562	-.0359	-.0011	.5270	1.7520	.7860	.241	.187	4.45**
	(-1.19)	(.63)	(1.72)	(-.39)	(-2.23)*	(2.09)*	(3.52)**	(.78)			

* Significant at .05 (two-tailed test)
** Significant at .01 (two-tailed test)

$$H_a : \delta_0 \neq \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq 0.$$

The R^2 and adjusted R^2 statistics vary depending on the choice of market index but are higher than .10 in all cases. The F statistics for the models using the VW index and EW index are statistically significant at .01 and the adjusted R^2 statistics are higher with the $\Delta\hat{\beta}$s measured using these indices as well.

Addressing the individual independent variables, the null hypothesis concerning the coefficients of total assets, the categorical variable representing debt covenants, the categorical variable representing management incentive plans and the measured change in lease commitments could not be rejected at the .05 level of significance. The following null hypotheses, therefore, were not rejected:

$$H_0 : \delta_1 = 0$$
$$H_0 : \delta_2 = 0$$
$$H_0 : \delta_3 = 0$$
$$H_0 : \delta_7 = 0$$

For the coefficient on non-capitalized leases, the sign was in the hypothesized direction and the coefficients were all significant at the .05 level. With the models using $\Delta\hat{\beta}$ measured by the VW and EW index, the coefficients were significant at .01. The null hypothesis was rejected for the coefficient on non-capitalized leases in favor of the alternative hypothesis:

$$H_0 : \hat{\delta}_4 < 0.$$

Regarding the coefficient on the change in the debt to equity ratio, the t tests were all significant at the .01 level, and the sign was in the hypothesized direction. The null hypothesis in this case was therefore rejected in favor of the alternative:[43]

$$H_0 : \hat{\delta}_6 > 0$$

The results regarding the debt to equity ratio are more ambiguous. When $\Delta\hat{\beta}$ was measured using the EW index, the t test was significant at the .05 level, however, with $\Delta\hat{\beta}$ measured using the SP and VW index, the coefficients were not significant. Because of this discrepancy, the null hypothesis could not be conclusively rejected:

$$H_0 : \hat{\delta}_5 = 0.$$

The results in general, were relatively consistent, with the exception of the coefficient on the debt to equity ratio, regardless of the choice of market index. As a further check on the impact of the measurement of the dependent variable, the signed F statistics from the Chow tests for shifts in beta were substituted for the $\Delta\hat{\beta}$s. Signed F statistics were computed simply by multiplying the sign of the change in beta, either positive or negative, by the F statistic which is by definition a positive number. The results of tests of these models are presented in Table 20. As with the model employing $\Delta\hat{\beta}$ the models using the signed F statistic of the Chow test yielded statistically significant results at the .05 level, although the R^2 and adjusted R^2 were slightly lower when the dependent variable was derived from Chow tests using the VW and EW index. With the dependent variable derived from Chow test using the SP index, the regression was significant at .01 and the R^2 and adjusted R^2 improved. The null hypotheses on the coefficients of total assets, debt covenants, incentive plans and the change in lease commitments could not be rejected as before and the null hypotheses were rejected on the coefficients of non-capitalized leases and the change in debt to equity ratio as before. Similarly ambiguous results were present regarding the coefficient of the debt to equity ratio in the signed F statistic models as in the $\Delta\hat{\beta}$

TABLE 20

Estimated Signed F-Statistic Model -- SFAS 13 (First Exposure Draft) -- Test Period 1

Market Index Used	Constant $\hat{\delta}_0$	Total Assets $\hat{\delta}_1$	Debt Covenant $\hat{\delta}_2$	Incentive Plan $\hat{\delta}_3$	Noncapitalized Leases $\hat{\delta}_4$	Debt/Equity Ratio $\hat{\delta}_5$	Change in DE Ratio $\hat{\delta}_6$	Change in Leases $\hat{\delta}_7$	R^2	Corrected R^2	F Statistic
Hypothesized Sign:	(?)	(-)	(-)	(-)	(-)	(?)	(+)	(+)			
	Estimated Parameters (t statistics)										
SP	-1.6710 (-1.95)	.0003 (1.70)	-.1647 (-.40)	.2497 (.61)	-.0046 (-2.15)*	2.56 (2.07)*	7.3382 (3.23)**	1.7488 (.38)	.186	.128	3.20**
VW	-.6185 (-.60)	.0001 (.51)	.0476 (.10)	.4249 (.86)	-.0064 (-2.49)**	2.2367 (1.61)	7.2378 (2.64)**	-2.0443 (-.37)	.163	.103	2.73*
EW	-1.7628 (-1.91)	.0002 (.63)	.4427 (.73)	.2191 (.36)	-.0081 (-2.57)**	3.4718 (2.06)*	10.2244 (3.07)**	1.5118 (.22)	.206	.150	3.64**

* Significant at .05 (two-tailed test)
** Significant at .01 (two-tailed test)

models. Generally, the results did not differ dramatically between the signed F models and the $\Delta\hat{\beta}$ models and the same inferences and conclusions could be drawn. In this case the results, inferences and conclusions do not appear to be sensitive to either the choice of market index employed or the measurement of the dependent variable.[44]

The cross-sectional models discussed above used dependent variables measured using the first exposure draft of SFAS 13 as the critical event. Since it is unclear which critical date is most appropriate for study in this context and others involving accounting policy decisions, the models and tests discussed above were repeated with variables measured surrounding the second exposure draft of SFAS 13 in July 1976.[45] Tables 21 and 22 present the results of the cross sectional regression models using $\Delta\hat{\beta}$ and signed F statistics for Test Period 2 (second Exposure Draft) as dependent variables. As before, the dependent variables were measured using the three indices discussed earlier, SP, VW and EW. The results are again consistent between the dependent variable used, $\Delta\hat{\beta}$ or the signed F statistics, and among the three indices. The results are, however, considerably different from the Test Period 1 results. None of the F statistics in these models indicates a statistically signficiant relationship between the dependent variable and the regressors as a group. Furthermore, the R^2 statistics and especially the adjusted R^2 statistics are considerably lower. The only coefficients for which the null hypothesis may be rejected are the constant term and the coefficient on the debt to equity ratio. The implications of these results are of interest in conjunction with the results from the Test Period 1 models.

Discussion of the $\Delta\hat{\beta}_j$ Model Results

The results presented in Tables 19 and 20 are consistent with some

TABLE 21

Estimated $\Delta\hat{\beta}j$ Model -- SFAS 13 (Second Exposure Draft) -- Test Period 2

Market Index Used	Estimated Parameters (t statistics) $\hat{\delta}_0$ Constant	$\hat{\delta}_1$ Total Assets	$\hat{\delta}_2$ Debt Covenant	$\hat{\delta}_3$ Incentive Plan	$\hat{\delta}_4$ Noncapitalized Leases	$\hat{\delta}_5$ Debt/Equity Ratio	$\hat{\delta}_6$ Change in DE Ratio	$\hat{\delta}_7$ Change in Leases	R^2	Corrected R^2	F Statistic
Hypothesized Sign:	(?)	(-)	(-)	(-)	(-)	(?)	(+)	(+)			
SP	-.5152	.0000	.0954	.0638	-.0001	.3974	.0867	1.5259	.033	-.036	.47
	(-2.43)**	(.15)	(.77)	(.52)	(-.23)	(1.22)	(.11)	(.56)			
VW	-.4302	.0000	.1857	-.0219	-.0003	.8222	-.2028	1.6937	.118	.055	1.87
	(-2.05)**	(.17)	(1.51)	(-.18)	(-.51)	(2.56)**	(-.27)	(.63)			
EW	-.3714	.0000	.1822	-.0514	-.0004	.5542	-.4024	.4266	.134	.072	2.16
	(-2.38)**	(.63)	(1.99)	(-.51)	(-.86)	(2.32)**	(-.72)	(.21)			

* Significant at .05 (two-tailed test)
** Significant at .01 (two-tailed test)

TABLE 22

Estimated Signed F-Statistic Model -- SFAS 13 (Second Exposure Draft) -- Test Period 2

Market Index Used	Estimated Parameters (t statistics) $\hat{\delta}_0$ Constant	$\hat{\delta}_1$ Total Assets	$\hat{\delta}_2$ Debt Covenant	$\hat{\delta}_3$ Incentive Plan	$\hat{\delta}_4$ Noncapitalized Leases	$\hat{\delta}_5$ Debt/Equity Ratio	$\hat{\delta}_6$ Change in DE Ratio	$\hat{\delta}_7$ Change in Leases	R^2	Corrected R^2	F Statistic
Hypothesized Sign:	(?)	(-)	(-)	(-)	(-)	(?)	(+)	(+)			
SP	-2.3597 (-3.93)**	-.0000 (-.53)	.1121 (.32)	-.0342 (-.10)	.0005 (.29)	2.5963 (2.78)**	.4558 (.21)	-1.5529 (-.20)	.094	.029	1.44
VW	-1.8253 (-2.38)**	.0000 (.25)	.4537 (1.01)	.2165 (.49)	-.0011 (-.54)	3.1665 (2.70)**	-1.2042 (-.44)	6.9971 (.71)	.119	.056	1.89
EW	-2.4390 (-2.190)**	.0001 (.65)	.9242 (1.88)	.1111 (.23)	-.0014 (-.59)	3.3246 (2.58)**	-1.3549 (.45)	2.1509 (.20)	.132	.070	2.13

* Significant at .05 (two-tailed test)
** Significant at .01 (two-tailed test)

of the a priori reasoning and theory discussed by Abdel-Khalik et al. [1981]. The models presented indicated statistically significant results in explaining the cross sectional variation among firms in terms of shifts in measured systematic risk in Test Period 1. The variables which were most significant in explaining the cross sectional differences among firms were the amount of non-capitalized leases prior to the first exposure draft of SFAS 13, and changes in the debt to equity ratio of the firms.

Abdel-Khalik et al. found that firms taking actions subsequent to the adoption of SFAS 13 which would reduce the debt to equity ratios had larger declines in systematic risk than those firms not taking such actions. Although their findings were consistent with the posited hypothesis that firms affected by SFAS 13 would take such actions and that such actions would lead to reductions in systematic risk for action firms, their results were found to be inconclusive largely because changes in financing decisions could not be unequivocably attributed to SFAS 13. (p. 154). The results presented here are largely consistent with the findings of Abdel-Khalik et al. and furthermore, consistent with their a priori reasoning regarding the extent to which firms having relatively large amounts of non-capitalized leases would be affected. The significant negative coefficient of the noncapitalized lease variable indicates that firms within the sample used in this research had a negative relationship between the amount of leases prior to 1975 and shifts in systematic risk.

The significant positive coefficient on the change in debt to equity ratio further supports the a priori reasoning that firms affected by SFAS 13 took action to mollify the effects of the lease capitalization, and that such actions led to relatively larger declines in systematic

risk. Unfortunately, however, as with the research presented by Abdel-Khalik et al., financing decisions which change the debt to equity ratio cannot necessarily be attributed to SFAS 13. Findings of a positive relationship between changes in the debt to equity ratios firms and changes in systematic risk are not surprising considering the findings of prior research [Hamada, 1972; Bowman, 1979, 1980] that would indicate such a relationship. The joint finding of a significant negative relationship between the amount of non-capitalized leases, prior to the first exposure draft of SFAS, and shifts in systematic risk, and a positive relationship between changes in the debt to equity ratio and shifts in systematic risk does add strength to the proposition presented by Abdel-Khalik et al. that actions to reduce the debt to equity ratio were induced by SFAS 13.

The finding that the coefficients of the categorical variables representing debt covenants that might be adversely affected as a result of lease capitalization were not significant is not necessarily surprising. For many of the covenants reported in the various annual reports and 10-K it was unclear whether or not non-capitalized leases were considered to be debt under the restrictive covenants. Abdel-Khalik et al. note that the concern expressed regarding possible technical violation of covenants may have been overmphasized because the long implementation period for SFAS 13 would allow firms to renegotiate contracts to avoid such technical violation.

In discussing the results of the cross sectional models for Test Period 2, consideration should be given to the dependent variable used. Fewer statistically significant shifts in beta were found for that time period, possibly confounding the results. In addition, the finding of the debt to equity ratio as having a significant relationship to changes in the measured systematic risk could be explained by the fact that the

previous year's changes in debt to equity ratio are now included in the measured debt to equity ratios for the Test Period 2 models. These are offered as possible explanations of the results found in conjunction with the test period, not as posited or proven hypotheses.

In summary, the results presented in this chapter, while not conclusive, are consistent with previous research on the effects of SFAS 13. The results are consistent with a proposition that firms in which management may have perceived the firm to be adversely affected by SFAS 13 may have taken actions to reduce the apparent effects of lease capitalization, and are further consistent with a proposition that such actions led to market reaction in terms of shifts in systematic risk. This evidence should be taken as further consideration of results of previous studies, and as evidence in support of hypotheses of prior research on which the results were inconclusive.

C H A P T E R V I I

SUMMARY, REVIEW AND CONCLUSIONS

Summary

The results presented in this study represent an extension of prior research in the area of the economic impact of accounting policy decisions in general and SFAS 13 in particular. Evidence was presented in Chapter IV indicating that firms affected by SFAS 13 exhibited changes in financial and accounting variables significantly different from the control group of firms, suggesting that firms affected by SFAS 13 may have initiated changes in financing or leasing policy in order to mollify the apparent effects of SFAS 13. This was not a particularly surprising finding in light of the strongly expressed negative sentiments reported in the financial press regarding SFAS 13. There was no evidence, based on the results of this study of a similar reaction to ASR 147.

While the results presented in Chapter V do not give convincing evidence of a negative capital market reaction to SFAS 13 in terms of residual analysis, some evidence of a larger number of statistically significant shifts in risk was found for the group of firms affected by SFAS 13 at the individual firm level of analysis. This result did not hold at the aggregate portfolio level, but the findings at the individual firm level is of interest in itself. For the firms studied which were affected by ASR 147, only limited evidence of a market reaction to ASR 147 in terms of residual analysis was found, but there was some indication of a significant decline in systematic risk for those firms at the portfolio level. This was further supported by the larger number

of firms having statistically significant shifts in systematic risk at the indivdiual firm level for the ASR 147 experimental sample. No evidence was found for either the ASR 147 control group or the SFAS 13 control group of a particularly large number of risk shifts at the individual firm level, nor was there any evidence of a statistically significant shift in systmeatic risk for either group at the portfolio level.

The results presented in Chapter VI do not give any indication that the propositions and models proposed as explanation of the cumulative abnormal residuals for firms affected by SFAS 13 have any strong explanatory power. The propositions and models discussed as explanation of shifts in systematic risk did present evidence of explanatory power for risk shifts surrounding the first exposure draft of SFAS 13. The results of hypothesis tests indicated further support for some of the propositions and a priori reasoning of the Abdel-Khalik et al. study. The results of this study add further confirmation to the empirical work of Abdel-Khalik et al. and bring additional evidence to bear on issues that were ambiguous from the results of that study. Specifically, shifts in systematic risk were found to be related in a positive direction to changes in the debt to equity ratio and negatively related to the amount of non-capitalized leases prior to SFAS 13.

Limitations and Perspective

The purposes of this study were to consider what effect, if any, new standards for lease accounting have had on management policy, to consider the capital market effect of the lease accounting standards and to consider explanations of these economic effects. Foster [1980] has underscored the idea that, while testing for the existence of an association between a particular accounting policy decision and a capital

market reaction is important, the more interesting research question is in testing explanations for such associations. This research has attempted to consider such explanations for a capital market reaction to accounting policy decisions on leasing. While careful partitioning of a sample can provide insight on such explanations, testing of a broader, cross-sectional explanatory model can provide further insight in considering explanations of the economic effects of accounting policy mandating changes in accounting methods.

As with any research, limitations must be recognized. In studies of accounting policy decisions, "event" time coincides with "real" time. As noted by Foster, the possibility of confounding events must be recognized, even when care has been exercised in order to allay this problem. This is potentially most severe, however, with accounting policies such as SFAS 19 which affect only one or two industries. As a result, the hypothesized causal link between an accounting policy decisions and economic event which occur concurrently with or subsequent to the accounting policy decisions, can not be proven unequivocally. Evidence presented can be taken only as supportive or not supportive of such causal hypotheses.

Another general concern is the choice of particular methodologies to study the research questions. Numerous choices, such as the form of the market model used, the choice of market index as proxy for the market portfolio, and the technique to be used in the estimation of systematic risk. The issues have been considered in a variety of contexts by other authors [Beaver, 1981; Foster, 1980; Brown and Warner, 1980; Elgers, 1980; Elgers and Murray, 1982] but the important question in this context is whether these choices lead to different inferences from the results derived. While care can be exercised in such choices, and different alter-

natives explored to assess the sensitivity of the results to these alternatives, somewhat arbitrary choices often need to be made. In this research, several alternatives were explored with regard to the estimation of systematic risk and with regard to the choice of market index used. While certain methodologies are asserted as superior on a priori grounds, this is not true with every choice made, and stronger or more significant results cannot be used in justifying the superiority of one method over another without such a priori support.

Yet another general concern is one which is endemic to much economic and accounting research. Many economic and financial variables are not directly measurable, and surrogate measures must be used. Valavanis [1959] as quoted in Kennedy [1980] has described the problem somewhat whimsically, yet with great insight:

> Econometric theory is like an exquisitely balanced French recipe.... But when the statistical cook turns to raw materials, he finds that hearts of cactus fruits are unavailable, so he substitutes chunks of cantaloupe; where the recipe calls for vermicelli he uses shredded wheat; and he substitutes green garment dye for curry, ping-pong balls for turtle's eggs, and, for Chalifougnac vintage 1883, a can of turpentine. (p. 83)

The point made is that the results of research employing econometric methods is only as good as the ingredients, the measured variables. While there is little that can be done in many cases to ameliorate the problem, it is necessary to acknowledge the problem of measurement error for many economic and accounting variables.

Significance and Implications

In recent years economic consequences of accounting policy decisions and standard setting have become a growing area of interest among a variety of constituencies. The standard setting process is becoming more political

and parties outside of the accounting profession, including the government and corporate management, have become more active. The growing debate with regard to economic consequences is no longer as much a question of whether such consequences exist but what impact such consequences should have on the standard setting process. Understanding the reasons for such economic consequences may add some insight to that question. An important point to be made with regard to research on accounting policy decisions, changes, and various types of accounting information comes from Gonedes and Dopuch [1974]. The current research methods used in accounting research of this type are unable to determine the desirability in a social or economic sense of changes in accounting standards or new disclosure requirements. Such judgements have been and remain subjective.

Clearly, the FASB, currently the primary accounting policy making body, is feeling increasing pressure to consider the economic consequences of its actions. This pressure has come from both government sources and private sector sources. [Zeff, 1978; Solomons, 1978]. Some academicians, as well, have made this suggestion. Collins, Rozeff, and Dhaliwal [1980] suggest that:

> ...accounting policy makers who are considering the elimination or alteration of exisitng accounting alternatives should recognize that accounting choice decisions and investment/financing decisions of the firm are interdependent, and that changes in the former may affect the latter, thereby creating wealth losses or wealth transfers among the firm's capital suppliers. (p. 64)

The implication of their statement is that accounting policy makers consider, at least subjectively, the social and economic costs and benefits of a particular accounting policy decision. Perhaps they should, but debate has centered on the extent to which the FASB's decisions should

be influenced by economic consequences. Zeff [1978] in particular has argued:

> To say that any significant economic consequences should be studied by the board does not imply that accounting principles and fair presentation should be dismissed as the principal guiding factor in the board's determination. (p. 63)

Arguments by Zeff and by Solomons [1978] to this effect are persuasive. The FASB and other accounting policy making bodies must balance their perspective between the economic effects of their decisions, and the accounting principles guiding those decisions.

Finally, an implication that has been largely ignored in the debate on economic consequences is the understanding of economic consequences by users of accounting information and by corporate management. Much of the research on SFAS 13 has focused on the posited economic consequences associated with management action in response to a mandated, but apparently cosmetic change in disclosure. Better understanding of the nature and source of possible economic consequences might be useful to both users and generators of accounting information.

ENDNOTES

1 Zeff [1978] and Solomons [1978] provide more thorough and thought provoking discussions of the issue surrounding economic consequences and the politicization of accounting.

2 In a March 1979 meeting of the FASB, various aspects of lease accounting were discussed. At that time a majority of Board members indicated that if lease accounting were to be reconsidered, the FASB, as presently constituted, would be inclined to support a property rights approach in which all non-cancelable leases would be capitalized and presented in the financial statements of lessees. [Alexander, 1981]

3 An extended discussion of the broader definition of a substantive change may be found in Foster [1980].

4 Zeff [1978] states that it is clear that various external sources, such as the United States Congress and certain governmental agencies, do expect policy making bodies like the FASB to explicitly consider the economic consequences of their actions.

5 ASR 147 was announced publicly in June 1973 and adopted in October to be effective November 30, 1973. For SFAS 13, an exposure draft was released in August 1975, revised and rereleased in July 1976 and released in final form in November 1976 to be effective January

1, 1977.

6 Only one experimental firm and one subsequently matched firm was included in both groups of samples.

7 As noted by Abdel-Khalik et al., any materiality criterion defined is necessarily arbitrary. This criterion is a more conservative definition of the materiality of noncapitalized leases than others used in the literature such as the one employed by Finnerty, Fitzsimmons and Oliver [1980].

8 The industry classification code assigned by Compustat conform closely to Standard Industrial Classification (SIC) codes used by the Bureau of Budget of the U.S. Government.

9 The Vasicek adjustment procedure was first suggested by Vasicek [1973] and has been employed by Elgers [1980] and Elgers and Murray [1982] in prior empirical research. The adjustment is:

$$\hat{\beta}_V = \frac{\hat{\beta}_i/\mathrm{Var}(\hat{\beta}_i) + \hat{\beta}'/\mathrm{Var}(\hat{\beta}')}{1/\mathrm{Var}(\hat{\beta}_i) + 1/\mathrm{Var}(\hat{\beta}')}$$

where $\hat{\beta}_V \equiv$ Vasicek-adjusted beta

$\hat{\beta}' =$ the cross-sectional mean of betas estimated by ordinary least squares (OLS)

$\mathrm{Var}(\hat{\beta}') =$ the variance of the cross-sectional distribution of OLS betas

$\hat{\beta}_i =$ the individual firm's beta as estimated by OLS

$\mathrm{Var}(\hat{\beta}_i) =$ the squared standard error of the individual

firm's OLS beta.

The cross-section of firms used in this part of the study initially included 96 potential experimental and match firms for the ASR 147 samples, and 206 potential experimental and match firms for the SFAS 13 time period.

Monthly returns were used to estimate the OLS betas. For the ASR 147 sample, 59 monthly returns from February 1969 to December 1973 were used, and for the SFAS 13 sample, 59 monthly from February 1971 to December 1975. For 2 firms in the ASR 147 group of 96 firms and 21 firms in the SFAS 13 group of 206 firms, data was missing for part of the five year period. For those firms, regressions were run using only the data available; for no firms however, was the estimation period less than 34 months.

10 Another issue of measurement arises because a choice needs to be made of which available market index to use as a proxy for the "true" market portfolio. The CRSP Equal-Weighted Index was chosen arbitrarily because, to implement the matching process, one market index had to be selected. Elgers and Murray [1981] note that an appropriate market index cannot be identified on an a priori basis, but did find empirically that estimates of beta generated using the CRSP Equal-Weighted Index were more highly correlated over successive time periods than estimates using other indices.

11 Since there may be fairly high collinearity among some of the match variables, it should be noted that each variable is weighted implicitly by the variance-covariance structure of the variables within the cross-section.

12 Tables 23 - 26 in the Appendix present selected financial data for the ASR 147 experimental group, the SFAS 13 experimental group, the ASR 147 control group and the SFAS 13 control group respectively. Tables 27 and 28 list the industries represented in the ASR 147 samples and SFAS 13 samples.

13 These variables are measured, as before, in 1973 for ASR 147 samples and 1975 for the SFAS 13 samples.

14 Table 29 in the Appendix presents selected financial data for the SFAS 13 supplemental sample and Table 30 lists the industries included in that sample.

15 Book value of debt was used for the reasons discussed earlier, in conjunction with Bowman's [1980] findings. Additionally, it should be noted that the book value of debt included the pro forma amounts of present values of non-capitalized lease commitments for the firms having such commitments, so that capitalization under SFAS 13 would not in itself affect the measures.

16 This measure includes capitalized and non-capitalized financing leases.

17 Tests were replicated in all cases using a market value measure for common equity in the debt ratio, and the results using that measure were substantially the same in all test periods.

18 For the 1975-1979 test period, five of the forty-six matched pairs had to be dropped because data was unavailable for one or both of the matched firms.

19 Although SFAS 13 is dated November 1976 by the FASB, the actual press release was not until December 2, 1976.

20 ASR 225, released by the SEC required retroactive compliance with SFAS 13 for firms filing with the SEC beginning with statements issued for fiscal years ending after December 24, 1978.

21 In addition to analysis on residuals from OLS regressions, a supplemental procedure was employed using residuals from regression parameters adjusted in consideration of the potential bias in these estimates of parameters introduced by trading infrequency. The problem has been discussed by Roll [1981] and by Dimson [1979]. The adjustment procedure used was the one suggested by Dimson [1979]. The Dimson estimator calculates a multiple regression of the portfolio or security return on contemporaneous, leading and lagged values of the market indices and then sums the slope coefficients to obtain an adjusted estimate of beta.

22 It is difficult to make any statistical inferences about the difference in the number of significant changes between the two samples. Hence no such claim is made.

23 In considering these results it should be borne in mind that the power of the Chow test to detect significant shifts in regression parameters is much lower with individual securities than with portfolios because of the greater magnitude of the error term in the regression using individual security returns.

[24] See Footnote 22 above.

[25] Table 42 in the Appendix presents the Table 12 Summary in a slightly different format in order to facilitate the comparison of results across indices.

[26] Because the analysis in this section depends upon matched samples, no analysis could be done using the supplemental sample of SFAS 13 non-capitalizing firms.

[27] As before, for completeness and in order to determine if the choice of market index had any impact upon the inferences from the results three indices were employed: Standard and Poors (SP), CRSP Value-Weighted (VW) and CRSP Equal-Weighted (EW).

[28] These critical dates were selected because abnormal price reaction is most likely to be associated with the announcement of a proposal or the adoption of a proposed accounting standard rather than effective dates of the pronouncements. Other studies of similar issues have centered on this type of event [Collins and Dent (1979), Abdel-Khalik et al. (1981)].

[29] Many researchers have eschewed the use of daily data in research of this type [Collins and Dent (1979), Collins, Rozeff and Dhaliwal (1980), Abdel-Khalik et al. (1981)], because of the possible bias and estimation problems associated with the market model at that level, and have used weekly data instead. Recent evidence cited by Dimson [1979] and Roll [1980] suggests that when a firm's shares are subject to infrequent trading these problems may be present for weekly data as well, although not as severely as for daily data. Dimson [1979] has suggested a procedure for addressing this problem, and this was employed as a

supplementary approach in the analysis of this section. This procedure is discussed further subsequently.

30 For the ASR 147 samples one firm had to be deleted from each sample because daily return data was unavailable for the firms on the CRSP data base. Hexcel Corporation was deleted from the non-capitalizing sample and Sta-Rite Industries was deleted from the capitalizing sample.

With the SFAS 13 samples, four companies were eliminated from the capitalizing sample and eight from the non-capitalizing sample because of the unvailability of daily price data. The firms deleted were Decorator Industries, National Mine Service, DWG Corporation and Chilton Corporation from the capitalizing sample, and Billy the Kid, Hoffman Industries, Puritan Fashions, Analog Devices, Arrow Automotive, Intermark, Mattel and Cenco from the non-capitalizing sample.

31 Tests of two-tailed hypotheses were done as well and the results were essentially parallel to those presented in Table 14.

32 See Dimson [1979] for a discussion of this bias in beta estimates.

33 The Dimson estimators of beta used here employed 10 lagged and 5 leading terms in the regression. Roll [1981] employed 21 lags and 5 leads and found that, for many periods up to ten lagged terms were often significant, but that further lags were seldom significant. The evidence Roll presents is limited, but in the absence of other evidence and in the interest of avoiding "data mining," the arbitrary decision was made to include 10 lags and 5 leads.

34 A further point of tangential interest is that the result was obtained when tests were done on the residuals from the market model, using the CRSP VW and CRSP EW indices. A researcher employing only the Standard

and Poor's index would not have found such a result at all.

35 A similar model could have been explored for firms affected by ASR 147 as well, but this was precluded by the much smaller size of the ASR 147 sample and the lack of certain data prior to 1972.

36 Reference was made in Footnote 30 above to the eight firms deleted from the SFAS 13 non-capitalizing sample. The four firms deleted from the SFAS 13 supplemental non-capitalizing sample were International Multifoods, Heublein, Alexander's and Caldor.

37 As is typical with most econometric studies, many variables are not inherently measurable directly; therefore, these represent proxy variables. The disturbance terms in the cross-sectional models will represent, in part, that measurement error. As a further control the F statistic indicating the significance of the systematic risk shift will be employed in order to see if the results differ.

38 This information was gathered from annual reports and 10-K filings with the SEC. The exact restrictions of the covenant or agreement were not always unambiguous from the disclosure made. A conservative approach was used in that only those firms for which specific reference was made to restrictions based on GAAP generated financial data or ratios were coded as having such loan or debt covenants.

Interestingly, several loan agreements (Delta Airlines, Republic Corporation, Barton's Candy and Dillard) specifically included limits on further indebtedness or leasing that could be undertaken, or formally included leases in the measurement of debt prior to SFAS 13. One agreement specifically excluded leases but stated that debt was measured per GAAP.

[39] This information was gathered from annual reports and from proxy statements filed with the SEC. As with debt covenants, a conservative approach was followed in that only those firms which disclosed specific reference to an accounting based performance measure that would be affected by SFAS 13 were coded as having such a plan.

[40] The non-capitalized lease commitments used represented disclosures in 1974 or 1975 per the requirements of ASR 147.

[41] The measurement of the dependent variables was for the year before the second exposure draft, 1975 rather than the year before the first exposure draft, 1974, for these models.

[42] This insensitivity to various assumptions and choices in research methodology should not be held as generalizable beyond the current research.

[43] In addition to employing a change in debt to equity ratio for one year, an identical model employing a two year change was run. The results were substantially the same as for the one year change.

[44] It should be noted again that this insensitivity to choices in market index and independent variable measurement should not be held as generalizable beyond the present study.

[45] The measurements of independent as well as dependent variables were changed to reflect the 1976 critical date; therefore, financial variables used 1975 rather than 1974 data.

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APPENDIX

SUPPLEMENTARY TABLES

TABLE 23

ASR 147 EXPERIMENTAL GROUP -- 1973 SELECTED RATIOS

Industry Code	Firm	Total Assets (MM $)	Non-Capitalized Leases to Total Assets	Leverage	Beta Coefficent
2010	Kane Miller	155.3	.126	.715	1.56
2200	Fieldcrest Mills	198.2	.060	.667	.89
2300	Hart, Schaffner & Marx	301.0	.055	.580	1.11
2300	Lilli Ann Corp.	9.9	.052	.460	1.68
2300	Noel Inds.	15.7	.074	.762	1.53
2549	Hexcel Corp.	27.4	.065	.515	1.88
2800	Allied Chemical	1762.5	.065	.389	.84
3000	Cooper Tire & Rubber	88.8	.378	.783	.97
3000	Uniroyal	1581.2	.057	.836	1.10
3210	Seagrave	54.1	.060	.799	1.68
3241	Kaiser Cement	205.2	.053	.713	.87
3270	National Gypsum	451.7	.053	.433	1.03
3310	Crane Co.	587.3	.077	.844	.95
3310	La Barge, Inc.	27.5	.052	.657	.86
3310	Unarco	66.9	.110	.739	1.19
3350	Belden	82.1	.109	.586	.45
3560	Milton Roy	28.0	.074	.294	1.20
3630	Scovil	361.0	.069	.707	1.29
3662	Raytheon	705.8	.050	.430	1.26
3714	Teleflex	18.2	.080	.605	1.69
3811	Whitehall	16.0	.054	.693	1.22
9997	Katy Inds.	180.7	.058	.823	1.34
9997	LTV Inds.	1829.1	.076	.949	1.96

TABLE 24

SFAS 13 EXPERIMENTAL GROUP -- 1975 SELECTED RATIOS

Industry Code	Firm	Total Assets (MM $)	Non-Capitalized Leases to Total Assets	Leverage	Beta Coefficient
2000	Consolidated Foods	1036.8	.091	.044	.86
2010	Rath Packing	52.8	.117	.912	.98
2046	Staley Mfg.	348.0	.061	.394	.76
2200	West Point Pepperl	360.0	.076	.422	.82
2300	Billy the Kid	20.6	.118	.720	1.75
2300	Damon Creations	21.2	.112	.703	1.14
2300	Manhattan Inds.	105.2	.107	.857	1.35
2300	Noel Inds.	11.7	.113	.738	1.25
2300	Phillips Van Heusen	171.1	.111	.750	1.47
2300	Piedmont Inds.	14.8	.196	.777	.75
2300	Puritan Fashions	97.5	.070	.852	1.63
2450	Golden West Homes	15.6	.069	.533	1.86
2649	APL Corp.	72.6	.069	.563	1.40
2761	Duplex Products	35.4	.153	.439	.68
2820	Pantasote Inc.	49.5	.067	.717	.44
2844	Helene Curtis	41.2	.129	.578	1.65
2911	Ashland Oil	1973.0	.126	.739	.73
3000	Armstrong Rubber	254.4	.093	.869	.97
3079	Cellucraft	14.9	.181	.806	1.35
3079	Robintech	83.7	.053	.566	1.13
3310	Hofmann Inds.	26.6	.082	.734	.67
3410	National Can	416.0	.104	.800	.94
3449	Brooks and Perkins	12.9	.100	.573	1.21
3449	Republic	117.5	.160	.837	1.55
3540	Esterline	80.0	.059	.699	1.41
3560	Scott and Fetzer	184.2	.058	.352	1.20
3610	Gould	641.7	.056	.589	1.03
3662	Moog	43.2	.142	.773	.95
3679	Analog Devices	20.7	.084	.525	1.31
3679	International Rectifier	51.1	.082	.658	1.37
3714	Arrow Automotive	21.9	.135	.530	.60
3714	Intermark	24.7	.227	.898	.71
3714	Whitaker Cable	31.9	.101	.790	1.05
3940	Mattel	167.5	.101	.497	1.76
4210	Banner Inds.	56.7	.104	.677	1.12
4210	Spector	94.1	.092	.864	1.18
5063	Action Inds.	31.1	.074	.710	1.20
5065	Sterling Electronics	21.2	.158	.855	1.67
5199	SMD Inds.	20.1	.109	.852	.78
5912	Gray Drug	94.4	.660	.695	.81
5912	Payless Drug Stores	60.4	.477	.349	1.24
5944	Jewelcor	62.1	.082	.716	2.00
5980	Suburban Propane	190.7	.050	.614	1.03
7370	Bolt, Beranek, Newman	15.2	.138	.458	1.19
8050	Cenco	163.4	.180	.698	1.79
8060	Huntingdon Health	17.4	.546	.732	1.35

TABLE 25

ASR 147 CONTROL GROUP -- 1973 SELECTED RATIOS

Industry Code	Firm	Total Assets (MM $)	Leverage	Beta Coefficient
2010	Iowa Beef Processors	152.9	.658	.91
2200	Spings Mills	442.1	.662	.47
2300	Garan Inc.	32.7	.423	1.33
2300	Interco Inc.	546.9	.435	1.14
2300	Jonathan Logan	262.9	.576	1.50
2649	Papercraft Corp.	79.8	.571	1.15
2800	Rohm and Haas	816.0	.276	.88
3000	Dayco Corp.	255.5	.822	.99
3000	Firestone	2669.0	.631	.86
3210	Guardian Inds.	85.9	.396	1.72
3241	Ideal Basic Inds.	270.5	.295	.94
3270	Gifford Hill & Co.	171.3	.623	.99
3310	Bliss and Laughlin Inds.	114.5	.602	.86
3310	Lukens Steel	148.9	.394	1.46
3310	National Steel	2024.4	.532	.80
3350	Revere Copper and Brass	485.7	.887	1.16
3560	StaRite Inds.	56.5	.697	1.05
3630	Reece Corp.	42.3	.106	.97
3662	King Radio	24.2	.281	1.59
3714	Kysor Industrial	72.6	.647	1.50
3811	United Industrial	46.7	.838	1.54
9997	Alaska Interstate	168.2	.586	1.26
9997	Litton Inds.	2116.2	.858	1.55

TABLE 26

SFAS 13 CONTROL GROUP -- 1975 SELECTED RATIOS

Industry Code	Firm	Total Assets (MM $)	Leverage	Beta Coefficient
2000	Quaker Oats	765.1	.437	.82
2010	Valmac Inds.	106.4	.800	1.20
2046	American Maize Prods.	118.2	.418	.90
2200	Riegel Textile	147.8	.559	.81
2300	Decorator Inds.	7.4	.580	1.21
2300	House of Ronnie	20.7	.566	1.39
2300	Jonathan Logan	252.7	.579	1.67
2300	Movie Star Inc.	20.8	.704	.81
2300	Palm Beach Inc.	70.4	.735	1.35
2300	Salant Corp.	94.2	.748	1.23
2300	Superior Surgical Mfg.	27.9	.760	1.15
2450	Kit Mfg.	12.1	.777	1.80
2649	Dennison Mfg.	156.5	.573	.98
2761	Ennis Business Forms	29.3	.426	.93
2820	Reichold Chemicals	237.1	.576	.84
2844	Faberge Inc.	166.7	.654	1.16
2911	Cities Service Co.	3233.5	.606	.40
3000	Mohawk Rubber	91.1	.763	.96
3079	Mongram Inds.	151.5	.770	1.45
3079	Voplex Corp.	10.3	.517	1.44
3310	Allegheny Ludlum Inds.	638.3	.719	.85
3410	Van Dorn Co.	69.3	.691	1.31
3449	Nucor Corp.	92.6	.611	1.02
3449	Philips Inds.	89.0	.796	1.45
3540	Acme - Cleveland	178.1	.742	.89
3560	National Mine Service	53.9	.317	1.24
3610	UV Inds.	446.7	.756	1.04
3662	Barnes Engineering	6.8	.746	1.54
3679	Electro Audio Dynamics	47.5	.890	1.29
3679	Veeco Instruments	29.8	.631	1.44
3714	Federal-Mogul Corp.	274.1	.691	.70
3714	Howell Inds.	9.3	.425	.72
3714	Kysor Industrial	71.8	.784	1.27
3940	Medalist Inds.	55.8	.781	1.18
4210	Golden Cycle Corp.	53.9	.695	.98
4210	Telecom Corp.	59.1	.884	1.23
5063	Clark Consolidated Inds.	8.1	.700	1.25
5065	Arrow Electronics	44.9	.866	1.26
5199	Universal Leaf Tobacco	237.2	.605	.62
5912	Cunningham Drug Stores	41.2	.685	1.22
5912	Revco Drug Stores	195.7	.295	1.02
5944	Medco Jewelry Corp.	27.0	.895	1.65
5980	DWG Corp.	143.8	.935	1.37
7370	Chilton Corp.	16.5	.664	1.56
8050	Beverly Enterprises	71.1	.888	1.44
8060	Humana Inc.	310.9	.805	1.40

TABLE 27

INDUSTRIES REPRESENTED IN ASR 147 SAMPLES

Industry Code	Industry
2010	Meat Products
2200	Textile Mill Products
2300	Apparel and Other Finished Products
2649	Converted Paper and Paperboard Products
2800	Chemicals and Allied Products
3000	Rubber and Miscellaneous Plastic Products
3210	Flat Glass
3241	Cement Hydraulic
3270	Concrete, Gypsum and Plaster
3310	Blast Furnaces and Steel Works
3350	Rolling and Drawing Nonferrous Metal
3560	General Industrial Machinery and Equipment
3630	Household Appliances
3662	Radio and Television Transmitting Equipment
3714	Motor Vehicle Parts and Accessories
3811	Engineering Laboratory and Research Equipment
9997	Conglomerates

TABLE 28

INDUSTRIES REPRESENTED IN SFAS 13 SAMPLES

Industry Code	Industry
2000	Food and Kindred Products
2010	Meat Products
2046	Wet Corn Milling
2200	Textile Mill Products
2300	Apparel and Other Finished Products
2450	Wood Buildings/ Mobile Homes
2649	Converted Paper and Paperboard Products
2761	Manifold Business Forms
2820	Plastic Materials and Synthetics
2844	Perfumes, Cosmetics and Toilet Preparations
2911	Petroleum Refining
3000	Rubber and Miscellaneous Plastic Products
3079	Miscellaneous Plastic Products
3310	Blast Furnaces and Steel Works
3410	Metal Cans and Shipping Containers
3449	Miscellaneous Metal Works
3540	Metal Working Machinery and Equipment
3560	General Industrial Machinery and Equipment
3610	Electronic Trnamission and Distribution Equipment
3662	Radio and Television Transmitting Equipment
3679	Electronic Components
3714	Motor Vehicle Parts and Accessories
3940	Toys and Amusements, Sporting Goods
4210	Trucking - Local and Long Distance
5063	Wholesale Electronic Apparatus and Equipment
5065	Wholesale Electronic Parts and Equipment
5199	Wholesale Nondurable Goods
5912	Retail -- Drugs and Proprietary Stores
5944	Retail -- Jewelry Stores
5980	Retail -- Fuel and Ice Dealers
7370	Services -- Computer and Data Processing
8050	Services -- Nursing and Personal Care
8060	Services -- Hospitals

TABLE 29

SFAS 13 SUPPLEMENTAL SAMPLE -- SELECTED 1975 FINANCIAL DATA

Industry Code	Firm	Total Assets (MM $)	Non-Capitalized Leases (MM $)	Non-Capitalized Leases to Total Assets
2000	Beatrice Foods	1844.4	166.3	.090
2041	International Multifoods	300.3	12.0	.040
2065	Bartons Candy	10.2	3.8	.373
2086	Heublein	742.9	64.7	.087
2099	CHB Foods	55.1	4.0	.073
2911	Atlantic Richfield	7364.8	486.7	.066
3140	Stride Rite	48.9	6.4	.131
3452	Huck Mfg.	35.5	3.2	.090
3651	Craig Corp.	33.4	2.5	.075
3728	Macrodyne	19.4	5.0	.258
3730	Conroy	33.8	1.5	.044
4511	Delta Airlines	1353.7	216.6	.160
5140	Scot Lad Foods	124.6	56.8	.456
5311	Alexanders	163.1	31.7	.194
5311	Allied Stores	1100.3	215.3	.196
5311	Ames Dept. Stores	37.3	38.3	1.027
5311	Associated Dry Goods	757.0	234.0	.309
5311	Carter Hawley Hale	794.0	275.7	.347
5311	Crowley Milner	24.6	11.5	.467
5311	Dayton-Hudson	944.9	36.3	.038
5311	Dillard	124.3	39.0	.313
5311	Federated Dept. Stores	1839.9	170.7	.093
5311	Jamesway Corp.	38.2	31.2	.940
5311	Marshall Field	356.4	29.9	.084
5311	Mercantile Stores	329.8	40.1	.122
5311	Outlet Co.	86.0	23.6	.274
5311	Sears Roebuck	11576.6	357.0	.031
5311	Vornado	381.7	50.2	.132
5311	Wieboldt Stores	87.0	15.5	.178
5311	Zayre Corp.	334.1	144.8	.433
5331	Caldor's Inc.	82.7	52.8	.638
5331	Kings Dept. Stores	83.2	73.6	.885
5331	Rapid American	1479.5	273.6	.185
5331	Wal-Mart Stores	100.2	41.3	.412
5411	Albertsons	221.9	142.1	.640
5411	Alterman	59.3	11.9	.201
5411	Circle K	67.4	53.1	.788
5411	Dillon Cos.	175.2	59.4	.339
5411	Fairmont Foods	154.8	25.3	.163
5411	Great A & P	989.3	94.7	.096
5411	Laneco	24.4	1.5	.061
5411	Lucky Stores	590.2	269.5	.456
5411	Niagra Frontier Systems	43.6	24.8	.569
5411	Penn Traffic	40.0	11.8	.295
5411	Petrolane	284.7	23.0	.081

TABLE 29 - CONTINUED

Industry Code	Firm	Total Assets (MM $)	Non-Capitalized Leases (MM $)	Non-Capitalized Leases to Total Assets
5411	Ruddick	73.5	13.6	.185
5411	Safeway Stores	1574.7	985.3	.626
5411	Supermarkets General	309.6	159.3	.515
5411	Thriftimart	59.4	15.7	.264
5411	Winn-Dixie Stores	445.5	33.8	.076
5600	Belscot Retailers	15.2	9.1	.599
5600	Masters	28.3	17.5	.618
5621	Lane Bryant	131.8	8.3	.063
5712	Levitz Furniture	142.7	140.3	.983
5712	RB Inds.	18.7	20.5	1.096
5812	Carrols Development	27.1	33.2	1.225
5812	Church's Fried Chicken	65.4	13.1	.200
5812	Collins Foods International	48.8	48.1	.986
5812	Denny's	140.4	114.7	.817
5812	Marriott Corp.	737.1	91.9	.124

TABLE 30

INDUSTRIES REPRESENTED IN SUPPLEMENTAL SAMPLE OF FIRMS AFFECTED BY SFAS 13

Industry Code	Industry
2000	Food and Kindred Products
2041	Flour and Other Grain Mill Products
2065	Candy and Other Confectionary
2085	Distilled, Rectified and Blended Beverages
2099	Food Preparations
2911	Petroleum Refining
3140	Footwear Except Rubber
3452	Bolts, Nuts, Screws, Rivets, Washers
3651	Radio and TV Receiving Sets
3728	Aircraft Parts and Auxiliary Equipment
3730	Ship and Boat Building and Repairing
4511	Air Transportatioin -- Certified
5311	Retail -- Department Stores
5331	Retail -- Variety Stores
5411	Retail -- Grocery Stores
5600	Retail -- Apparel and Accessory Stores
5621	Retail -- Women's Ready to Wear
5712	Retail -- Furniture Stores
5812	Retail -- Eating Places

Table 31

Chow Test Statistics and Beta Changes --

ASR 147 Non-Capitalizing Firms

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Kane Miller	-.67	1.54	-1.35	7.94*	1.90	6.37*
Fieldcrest Mills	-.12	.07	1.24	.31	+.07	.05
Hart, Schaffner & Marx	+.34	.70	-.02	.00	-.07	.05
Lilli Ann Corp.	-.63	1.34	-1.11	4.55*	-.54	2.34
Noel Inds.	-.15	.04	+.04	.00	+.01	.00
Hexcel Corp.	+1.25	5.83*	1.15	5.66*	+.78	5.12*
Allied Chemical	+.01	.00	-.08	.06	-.14	.31
Cooper Tire & Rubber	+1.40	7.94*	+.67	1.81	+.83	6.54*
Uniroyal	+.04	.01	-.29	.81	.01	.00
Seagrave	-1.04	3.36	-1.20	5.17*	-.52	2.27
Kaiser Cement	+.22	.29	-.04	.01	+.13	.25
National Gypsum	+.49	1.59	-.86	6.26*	-.41	2.78
Crane Co.	-.56	2.36	-.63	3.17	-.38	2.37
LaBarge, Inc.	+.18	.10	+.00	.00	+.10	.06
Unarco	-.44	.95	-.57	1.82	-.51	2.96
Belden	+.07	.04	-.07	.06	+.03	.02
Milton Roy	+.31	.34	-.11	.05	-.01	.00
Scovil	-.09	.05	-.47	1.52	-.09	.12
Raytheon	-.54	1.93	-.55	2.40	-.70	6.92*
Teleflex	-.07	.01	-.24	.20	-.15	.15
Whitehall	-.02	.00	-.48	.67	-.53	1.69
Katy Inds.	+.04	.01	-.57	1.14	-.21	.31
LTV Inds.	-1.44	4.90*	-1.35	4.28*	-.81	2.95

* Significant at .05 level of significance

Table 32

Chow Test Statistics and Beta Changes --

ASR 147 Capitalizing Firms

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Iowa Beef Processers	-.27	.31	+.01	.00	+.10	.08
Springs Mills	+.16	.26	+.21	.40	+.14	.86
Garan Inc.	+.80	2.05	-.10	.04	+.05	.02
Interco Inc.	+.55	3.57	+.14	.19	+.16	.49
Jonathan Logan	+1.13	4.67*	+.62	1.41	+.79	4.12*
Papercraft Corp.	+.58	1.48	+.21	.21	+.36	1.38
Rohm and Haas	+.38	.93	+.43	1.59	+.34	1.62
Dayco Corp.	+.28	.63	-.53	2.30	-.16	.41
Firestone	+.22	.57	+.05	.03	+.19	.84
Guardian Inds.	+.38	.38	+.42	.47	+.57	1.74
Ideal Basic Inds.	+.05	.03	+.04	.14	-.14	.36
Gifford Hill & Co.	+.19	.20	+.08	.04	-.18	.46
Bliss and Laughlin Inds.	+.09	.08	-.30	.90	-.11	.31
Lukens Steel	-.71	2.13	-.84	3.47	-.75	5.04*
National Steel	-.24	.76	-.62	5.59*	-.31	2.59
Revere Copper and Brass	-.19	.07	-.40	.36	-.14	.09
StaRite Inds.	+.90	4.03*	+.57	1.67	+.25	.61
Reece Corp.	+.06	.03	-.20	.25	+.08	.09
King Radio	+.80	.46	-.06	.01	+.05	.01
Kysor Industrial	-.82	2.22	-1.13	4.75*	-.44	1.72
United Industrial	-.17	.12	-.91	3.41	-.65	3.29
Alaska Interstate	.20	.10	-.48	.63	-.44	.83
Litton Inds.	-.02	.00	-1.21	3.53	-.39	.81

* Significant at .05 level of significance

Table 33

Chow Test Statistics and Beta Changes --

SFAS 13 Non-Capitalizing Firms - Period 1

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Consolidated Foods	-1.02	11.12*	-.99	14.19*	-.64	13.93*
Rath Packing	+.28	.13	+.41	.26	+.22	.26
Staley Mfg.	-.49	1.20	-.47	1.41	-.38	1.77
West Point Pepperel	-.53	2.27	+.41	1.58	-.24	1.00
Billy the Kid	-.24	.07	-.28	.12	-.32	.32
Damon Creations	-.99	3.03	-.36	.46	-.36	1.04
Manhattan Inds.	-.34	.44	.16	.13	+.15	.28
Noel Inds.	-.27	.13	+.34	.27	+.41	.80
Phillips Van Heusen	-.83	1.95	+.01	.00	-.02	.00
Piedmont Inds.	+.78	.71	+1.45	3.17	+1.31	5.59*
Puritan Fashions	+.26	.09	+1.27	2.57	+.70	1.95
Golden West Homes	-.45	.33	+.24	.11	-.21	.18
APL Corp.	-.91	2.57	-.41	.66	-.40	1.32
Duplex Products	+.22	.13	+.42	.59	+.47	1.33
Pantasote Inc.	+.45	.52	+.60	1.21	+.39	1.03
Helene Curtis	+.12	.02	+.48	.52	+.18	.17
Ashland Oil	-.01	.00	+.32	1.16	+.19	.78
Armstrong Rubber	-.03	.00	+.45	.90	+.05	.02
Cellucraft	-.59	.35	+.50	.32	+.37	.38
Robintech	-.51	.34	+.31	.18	+.31	.36
Hoffman Inds.	+.52	.61	+.91	2.45	+.82	4.15*
National Can	+.43	1.18	+.64	3.67	+.37	2.55
Brooks & Perkins	+.70	1.20	+.66	1.35	+.44	1.32
Republic	-.33	.17	+1.12	2.17	+.51	1.35
Esterline	+.48	1.06	+.77	3.92	+.50	4.49*
Scott & Fetzer	-.38	.98	-.27	.66	-.09	.14
Gould	-.38	1.00	-.18	.28	-.25	1.14
Moog	+.63	1.32	+1.08	5.35*	+.93	8.93*
Analog Devices	+.32	.29	+.11	.30	+.32	.71
International Rectifier	-.21	.09	-.01	.00	-.00	.00
Arrow Automotive	+1.30	2.43	+1.71	6.01*	+1.22	5.63*
Intermark	+.92	1.68	-1.02	2.53	+.46	.96
Whitaker Cable	-.41	.66	+.24	.26	+.02	.00
Mattel	+.76	.60	+.82	.69	+.25	.16
Banner Inds.	+.35	.21	+1.30	3.51	+.61	1.69
Spector	+.35	.21	+.42	.35	+.26	.30
Action Inds.	+.06	.00	+.48	.42	+.54	1.15

Table 33 (Continued)

Company	SP INDEX Beta Change	SP INDEX Chow Statistic	VW INDEX Beta Change	VW INDEX Chow Statistic	EW INDEX Beta Change	EW INDEX Chow Statistic
Sterling Electronic	+.39	.18	+.36	.18	+.10	.03
SMD Inds.	+.84	1.59	+1.60	7.45*	+1.18	8.35*
Gray Drug	-.20	.15	+.19	.16	+.15	.21
Payless Drug Stores	-.31	.50	+.01	.00	-.10	.16
Jewelcor	-.09	.01	+.10	.02	-.23	.26
Suburban Propane	-.29	.33	-.13	.09	-.16	.25
Bolt Beranek & Newman	-.05	.01	+.25	.17	+.04	.01
Cenco	+.24	.06	+.65	.57	+.50	.67
Huntingdon Health	+.17	.07	+.24	.17	+.51	1.70

Table 34

Chow Test Statistics and Beta Changes --

SFAS 13 Non-Capitalizing Firms - Period 2

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Consolidated Foods	-.73	5.04*	-.73	6.75*	-.50	5.30*
Rath Packing	+.56	.60	+.95	2.04	+.48	1.07
Staley Mfg.	+.12	.06	+.14	.11	+.07	.06
West Point Pepperel	-.34	.83	-.20	.36	-.07	.08
Billy the Kid	-.60	.37	-.30	.11	-.57	.87
Damon Creations	1.42	4.96*	-.44	.51	-.50	1.43
Manhattan Inds.	-1.04	3.46	-.47	.81	-.23	.42
Noel Inds.	-.56	.51	+.11	.03	-.04	.01
Phillis Van Heusen	-.96	2.39	-.07	.02	+.01	.00
Piedmont Inds.	-.03	.00	+1.06	1.39	+.70	1.24
Puritan Fashions	-.07	.01	+1.24	2.38	+.71	1.85
Golden West Homes	-1.18	2.09	-.18	.05	-.46	.77
APL Corp.	-.96	2.71	-.27	.28	+.15	.31
Duplex Products	+.40	.36	+.60	1.13	+.70	2.66
Pantasote Inc.	+.04	.00	+.22	.14	+.12	.08
Helene Curtis	+.10	.02	+.36	.27	-.11	.05
Ashland Oil	-.23	.42	+.10	.10	+.04	.03
Armstrong Rubber	-.08	.02	+.47	.86	+.17	.24
Cellucraft	-.76	.51	+.49	.26	+.24	.15
Robintech	+.70	.62	+.21	.07	+.35	.38
Hoffman Inds.	+.52	.61	+.91	2.45	+.82	4.18*
National Can	+.22	.24	+.40	1.24	+.32	1.52
Brooks and Perkins	+.44	.44	+.35	.35	+.19	.22
Republic	+.33	.16	+1.20	2.69	+.68	2.30
Esterline	+.63	1.63	+.97	5.54*	+.70	8.08*
Scott & Fetzer	-.46	1.40	-.28	.67	-.15	.32
Gould	-.50	1.67	-.38	1.17	-.27	1.19
Moog	+.59	1.08	+1.22	6.62*	+1.00	9.65*
Analog Devices	+.23	.13	+.46	.67	+.35	.75
International Rectifier	+.11	.02	+.32	.25	+.20	.20
Arrow Automotive	+1.20	1.75	+1.48	3.72	+1.05	3.44
Intermark	-.73	.89	-.75	1.15	-.30	.33
Whitaker Cable	-.38	.51	+.39	.58	+.09	.06
Mattel	+.76	.60	+.82	.69	+.25	.16
Banner Inds.	+.60	.52	+1.46	3.90	+.89	3.09

Table 34 (Continued)

Company	SP INDEX Beta Change	SP INDEX Chow Statistic	VW INDEX Beta Change	VW INDEX Chow Statistic	EW INDEX Beta Change	EW INDEX Chow Statistic
Spector	+.49	.41	+.40	.31	+.44	.80
Action Inds.	-.75	.72	-.19	.06	+.07	.02
Sterling Electronics	-.64	.41	-.53	.35	-.45	.54
SMD Inds.	+.87	1.56	+1.89	9.73*	+1.27	8.54*
Gray Drug	-.31	.30	+.07	.02	+.07	.04
Payless Drug Stores	-.30	.41	+.02	.00	-.10	.14
Jewelcor	-.17	.04	+.04	.00	-.28	.32
Suburban Propane	-.45	.75	-.35	.60	-.23	.49
Bolt, Beranek & Newman	+.15	.04	+.73	1.26	+.26	.33
Cenco	+.24	.06	+.65	.57	+.50	.67
Huntingdon Health	-.21	.09	+.03	.00	+.26	.38

Table 35

Chow Test Statistics and Beta Changes --

SFAS 13 Non-Capitalizing Firms - Period 3

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Consolidated Foods	-.65	3.65	-.72	6.25*	-.52	5.41*
Rath Packing	+.72	.96	+1.05	2.43	+.61	1.69
Staley Mfg.	+.26	.25	+.20	.19	+.11	.11
West Point Pepperel	-.36	.91	-.23	.44	-.11	.16
Billy The Kid	-.23	.05	-.09	.01	-.43	.46
Damon Creations	1.36	4.40*	-.40	.40	-.44	1.03
Manhattan Inds.	-1.00	2.97	-.48	.80	-.23	.40
Noel Inds.	-.65	.64	+.03	.00	-.16	.09
Phillis Van Heusen	-.88	1.85	-.00	.00	+.06	.02
Piedmont Inds.	+.04	.00	+1.03	1.23	+.71	1.21
Puritan Fashions	-.02	.00	+1.30	2.42	+.74	1.89
Golden West Homes	-1.34	2.67	-.40	.25	-.62	1.35
APL Corp.	-.98	2.58	-.28	.26	-.18	.24
Duplex Products	-.40	.32	+.61	1.09	+.72	2.70
Pantasote Inc.	-.12	.03	+.04	.00	-.03	.00
Helene Curtis	+.17	.04	+.37	.27	-.11	.05
Ashland Oil	-.15	.17	+.12	.15	+.04	.03
Armstrong Rubber	-.22	.15	+.37	.50	+.10	.09
Cellucraft	-.81	.56	+.38	.17	+.13	.04
Robintech	-1.24	2.03	-.04	.00	+.12	.06
Hoffman Inds.	+.52	.61	+.91	2.45	+.82	4.15*
Natioinal Can	+.35	.32	+.42	1.41	+.32	1.55
Brooks and Perkins	+.48	.49	+.36	.34	+.20	.24
Republic	-.30	.13	+1.23	2.72	+.76	2.69
Esterline	+.75	2.21	+.99	5.73*	+.73	8.66*
Scott & Fetzer	+.36	.76	-.26	.52	-.14	.26
Gould	-.67	2.74	-.52	2.10	-.35	1.88
Moog	+.55	.88	+1.17	5.71*	+.98	8.73*
Analog Devices	+.37	.31	+.55	.93	+.48	1.32
International Rectifier	+.37	.25	+.51	.62	+.33	.59
Arrow Automotive	+.99	1.12	+1.37	3.07	+1.01	2.94
Intermark	-.60	.56	-.68	.92	-.23	.18
Whitaker Cable	-.24	.19	-.39	.88	+.18	.29
Mattel	+.76	.60	+.82	.69	+.25	.16
Banner Inds.	+.59	.49	+1.36	3.39	+.83	2.61

Table 35 (Continued)

Company	SP INDEX Beta Change	SP INDEX Chow Statistic	VW INDEX Beta Change	VW INDEX Chow Statistic	EW INDEX Beta Change	EW INDEX Chow Statistic
Spector	+.65	.67	+.50	.47	+.52	1.06
Action Inds.	-.87	.96	-.27	.11	-.01	.00
Sterling Electronics	-.54	.27	-.51	.31	-.45	.49
SMD Inds.	+1.09	2.31	+2.06	11.46*	+1.45	11.09*
Gray Drug	-.24	.18	+.11	.05	+.10	.07
Payless Drug Stores	-.31	.42	-.03	.00	-.14	.24
Jewelcor	-.20	.05	-.00	.00	-.28	.32
Suburban Propane	-.29	.29	-.24	.25	-.16	.20
Bolt, Beranek & Newman	+.26	.12	+.73	1.57	+.39	.68
Cenco	+.24	.06	+.65	.57	+.50	.67
Huntingdon Health	-.11	.03	+.06	.01	+.30	.48

Table 36

Chow Test Statistics and Beta Changes --

SFAS 13 Capitalizing Firms - Period 1

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Quaker Oats	-.72	4.54*	-.15	.18	-.16	.40
Valmac Inds.	-.31	.21	-.53	.80	+.06	.02
American Maize Products	-.38	.53	-.44	.97	-.10	.09
Riegel Textile	+.05	.02	+.44	2.00	+.29	2.10
Jonathan Logan	-.34	.15	+.07	.01	+.00	.00
Superior Surgical Mfg.	-.12	.03	+.25	.15	+.07	.03
Salant Corp.	-1.01	2.86	-.24	.16	-.38	1.03
Decorator Inds.	-.39	.51	-.39	.58	-.16	.21
House of Ronnie	-.01	.00	+.20	-.18	-.29	1.12
Movie Star Inc.	-.32	.48	-.09	.04	+.03	.01
Palm Beach Inc.	-1.16	3.64	-.26	.24	+.04	.01
Kit Mfg.	+.20	.04	+.04	.03	+.17	.22
Dennison Mfg.	+.11	.23	+.15	.18	+.00	.00
Ennis Business Forms	-.09	.04	+.40	.99	+.32	1.39
Reichold Chemical	+.39	.66	+.34	.71	+.17	.33
Faberge Inc.	+.44	.72	+.59	1.63	+.41	1.67
Cities Service Co.	+.18	.26	-.12	.15	+.00	.00
Mohawk Rubber	+.03	.01	+.26	.52	+.15	.45
Monogram Inds.	+.32	.30	+.28	.28	-.05	.03
Voplex Corp.	-.45	.64	+.01	.00	-.04	.01
Allegheny Ludlum	-.01	.00	+.27	.54	+.21	.75
Van Dorn Co.	-.32	.51	-.30	.53	-.14	.28
Nucor Corp.	+.71	2.23	+.69	2.71	+.21	.63
Philips Inds.	+.40	.30	+.96	2.32	+.49	1.50
Acme Cleveland	+.25	.40	+.51	1.98	+.27	1.32
National Mine Service	+.22	.12	+.21	.15	+.13	.11
UV Inds.	-.07	.02	-.23	.27	-.12	.13
Barnes Engineering	+.35	.19	+1.37	3.62	+.97	4.60*
Veeco Instruments	+.36	.24	+.73	1.26	+.85	4.26*
Electro Audio Dynamics	+.12	.04	+.67	1.50	+.46	1.79
Howell Inds.	+.22	.38	+.49	2.35	+.19	.80
Federal-Mogul	+.83	.86	+1.34	2.77	+.64	1.26

Table 36 (Continued)

Company	SP INDEX Beta Change	SP INDEX Chow Statistic	VW INDEX Beta Change	VW INDEX Chow Statistic	EW INDEX Beta Change	EW INDEX Chow Statistic
Kysor Industrial	+.25	.17	+.74	2.04	+.21	.39
Medalist Inds.	+.17	.10	+.42	.84	+.14	.25
Golden Cycle Corp.	-.63	.36	-1.05	1.25	-.41	.33
Telecom Corp.	-.04	.01	+.24	.21	+.31	.78
Clark Consolidated	-.43	.28	-1.13	2.58	-.43	.73
Arrow Electronics	+.05	.01	+.12	.04	+.53	1.96
Universal Leaf Tobacco	-.33	.83	-.02	.01	+.07	.08
Cunningham Drugs	-.33	.52	-.21	.28	-.33	1.58
Revco Drug Stores	-.36	.56	-.16	.12	-.09	.06
Medo Jewelry Corp.	-1.57	2.82	-.152	3.20	-.92	2.36
DWG Corp.	-.72	.96	-.57	.76	-.19	.22
Chilton Corp.	-.20	.08	+.21	.11	-.22	.33
Beverly Enterprises	+.71	.77	+.78	1.23	+.42	.86
Humana Inc.	+.04	.00	+.35	.41	+.23	.36

Table 37

Chow Test Statistics and Beta Changes --

SFAS 13 Capitalizing Firms - Period 2

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Quaker Oats	-.53	1.93	-.02	.01	+.06	.04
Valmac Inds.	-.44	.36	-.47	.59	+.00	.00
American Maize Products	+.20	.14	+.14	.09	+.22	.39
Riegel Textile	-.57	2.36	-.10	.08	-.14	.36
Jonathan Logan	+.24	.06	+.79	.78	+.29	.23
Superior Surgical Mfg.	-.54	.53	-.04	.00	-.15	.10
Salant Corp.	-1.07	2.88	-.16	.04	-.29	.50
Decorator Inds.	-.81	2.12	-.68	1.65	-.62	3.09
House of Ronnie	-.12	.05	+.23	.23	-.24	.67
Movie Star Inc.	-.60	1.46	-.42	.84	-.24	.67
Palm Beach Inc.	-1.21	3.61	-.15	.07	+.23	.32
Kit Mfg.	-.81	.63	-.70	.61	-.59	.94
Dennison Mfg.	-.43	1.18	-.15	.14	-.24	.86
Ennis Business Forms	-.16	.11	+.26	.38	+.23	.60
Reichold Chemical	+.12	.06	+.23	.30	+.02	.01
Faberge Inc.	+.41	.60	+.50	1.12	+.39	1.42
Cities Service Co.	+.27	.57	-.08	.06	+.02	.01
Mohawk Rubber	+.13	.07	+.48	1.23	+.24	.79
Monogram Inds.	+.33	.29	+.57	1.04	+.10	.08
Voplex Corp.	-.64	1.13	-.21	.16	-.11	.10
Allegheny Ludlum	-.24	.30	+.26	+.46	+.12	.20
Van Dorn Co.	-.41	.74	-.06	.02	-.10	.11
Nucor Corp.	+.02	.00	-.06	.02	-.32	1.21
Philips Inds.	-.44	.33	+.43	.44	+.15	.13
Acme Cleveland	+.26	.38	+.47	1.46	+.33	1.66
National Mine Service	+.23	.12	+.28	.22	+.20	.24
UV Inds.	-.26	.25	-.31	.46	-.25	.60
Barnes Engineering	+.04	.00	+1.22	2.53	+.81	2.67
Veeco Instruments	-.26	.13	+.28	.18	+.30	.50
Electro Audio Dynamics	+.22	.12	+.90	2.66	+.57	2.75
Howell Inds.	-.10	.07	+.26	.66	+.03	.02
Federal Mogul	-.22	.06	+.24	.08	-.08	.02

Table 37 (Continued)

Company	SP INDEX Beta Change	SP INDEX Chow Statistic	VW INDEX Beta Change	VW INDEX Chow Statistic	EW INDEX Beta Change	EW INDEX Chow Statistic
Kysor Industrial	-.46	.52	+.06	.01	-.23	.41
Medalist Inds.	-.03	.00	+.30	.42	+.10	.12
Golden Cycle Corp.	-.56	.25	-1.24	1.55	-.58	.60
Telecom Corp.	+.17	.07	+.55	.88	+.25	.43
Clark Consolidated	-.14	.03	-.40	.28	-.18	.11
Arrow Electronics	-.40	.35	-.11	.04	+.22	.35
Universal Leaf Tobacco	-.41	1.14	-.05	.02	+.10	.18
Cunningham Drugs	-.13	.07	+.03	.01	-.10	.11
Revco Drug Stores	-.42	.69	-.31	.44	+.00	.00
Medco Jewelry Corp.	-1.99	4.14*	-1.53	3.03	-1.25	4.03*
DWG Corp.	1.13	2.12	-.53	.61	-.42	.87
Chilton Corp.	-.51	.44	-.14	.04	-.56	1.54
Beverly Enter-prises	+1.17	2.08	+1.59	5.13*	+.97	4.43*
Humana Inc.	=.43	.40	+.90	2.51	+.67	2.66

Table 38

Chow Test Statistics and Beta Changes --

SFAS 13 Capitalizing Firms - Period 3

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Quaker Oats	-.40	1.04	-.02	.00	+.08	.06
Valmac Inds.	-.33	.20	-.47	.56	-.02	.00
American Maize Products	+.12	.05	-.04	.01	+.04	.02
Riegel Textile	-.54	2.04	-.05	.02	-.11	.23
Jonathan Logan	+.06	.00	+.46	.27	+.04	.01
Superior Surgical Mfg.	-.55	.50	-.10	.02	-.20	.19
Salant Corp.	-.99	2.32	-.11	.03	-.30	.50
Decorator Inds.	-.77	1.71	-.69	1.60	-.63	2.86
House of Ronnie	-.36	.47	-.01	.00	-.43	2.17
Movie Star Inc.	-.58	1.37	-.44	.90	-.31	1.04
Palm Beach Inc.	-1.19	3.18	-.12	.04	+.25	.35
Kit Mfg.	-1.01	.99	-1.00	1.27	-.86	2.04
Dennison Mfg.	-.42	1.08	-.24	.14	-.25	.97
Ennis Business Forms	-.02	.00	+.36	.60	+.29	.88
Reichold Chemical	-.00	.00	+.11	.07	-.06	.04
Faberge Inc.	+.38	.45	+.44	.80	+.35	1.11
Cities Service Co.	+.32	.70	-.07	.04	+.04	.02
Mohawk Rubber	+.08	.00	+.40	.86	+.20	.53
Monogram Inds.	+.51	.67	+.68	1.42	+.25	.39
Voplex Corp.	-.49	.64	-.12	.05	-.03	.00
Allegheny Ludlum	-.22	.26	+.27	.49	+.14	.27
Van Dorn Co.	-.32	.42	-.09	.03	-.11	.15
Nucor Corp.	+.11	.05	-.04	.01	+.32	1.12
Philips Inds.	-.60	.57	+.32	.23	+.08	.04
Acme Cleveland	+.51	1.62	+.57	2.32	+.43	3.39
National Mine Service	+.07	.01	+.15	.06	+.07	.03
UV Inds.	+.02	.00	-.12	.06	-.10	.11
Barnes Engineering	-.16	.03	+1.01	1.71	+.70	1.94
Veeco Instruments	-.61	.67	-.05	.01	+.05	.01
Electro Audio Dynamics	+.23	.12	+.84	2.10	+.52	2.06
Howell Inds.	-.20	.25	+.18	.24	-.02	.01
Federal Mogul	-.24	.06	+.22	.06	-.03	.00

Table 38 (Continued)

Company	SP INDEX Beta Change	SP INDEX Chow Statistic	VW INDEX Beta Change	VW INDEX Chow Statistic	EW INDEX Beta Change	EW INDEX Chow Statistic
Kysor Industrial	-.26	.16	+.18	.11	-.09	.07
Medalist Inds.	-.06	.01	+.18	.15	+.01	.00
Golden Cycle Corp.	-.16	.02	-1.02	1.04	-.45	.34
Telecom Corp.	+.48	.49	+.70	1.29	+.39	.92
Clark Consolidated	+.00	.00	-.38	.25	-.15	.08
Arrow Electronics	-.36	.25	-.07	.02	+.25	.38
Universal Leaf Tobacco	-.27	.59	+.01	.00	+.17	.63
Cunningham Drugs	+.01	.00	+.07	.03	-.06	.04
Revco Drug Stores	-.42	.67	-.38	.61	-.09	.05
Medco Jewelry Corp.	-1.95	3.98*	-1.45	2.58	-1.19	3.41
DWG Corp.	-1.21	2.34	-.63	.83	-.50	1.13
Chilton Crop.	-.54	.46	-.25	.12	-.62	1.86
Beverly Enterprises	+1.10	1.75	+1.45	4.16*	+.85	3.25
Humana Inc.	+.58	.73	+.98	2.92	+.76	3.54

Table 39

Chow Test Statistics and Beta Changes--

SFAS 13 Supplemental Firms - Period 1

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Beatrice Foods	-.27	.99	+.13	.94	-.29	2.78
International Multifoods	-.25	.62	-.01	.00	-.14	.43
Bartons Candy	-.37	.29	+.04	.00	-.04	.01
Heublein	-.93	4.44*	-.81	4.61*	-.68	5.64*
CHB Foods	+1.41	3.78	+1.46	4.91*	+1.13	5.61*
Atlantic Richfield	-.10	.09	-.10	.22	+.04	.04
Stride Rite	+.04	.01	+.19	.28	+.09	.15
Huck Mfg.	+.44	.52	+.41	.62	+.29	.55
Craig Corp.	-.87	1.65	-.35	.32	-.44	1.25
Macrodyne	+.60	.32	+1.28	1.93	+.79	1.56
Conroy	-.77	1.19	-.50	.60	-.31	.55
Delta Airlines	-.47	1.47	-.31	.96	-.10	.18
Scot Lad Foods	-.53	1.12	-.27	.41	-.27	1.01
Alexanders	-1.52	5.44*	-.93	2.47	-.80	4.62*
Allied Stores	-.69	4.12*	-.36	1.31	-.44	4.67*
Ames Dept. Stores	+.16	.08	+.21	.48	+.12	.14
Associated Dry Goods	-.64	2.58	-.23	.42	-.28	1.19
Carter Hawley, Hale	-1.36	6.81*	-.45	.72	-.71	4.38*
Crowley Milner	-.10	.06	+.15	.16	-.16	.37
Dayton Hudson	+.13	.08	+.17	.18	-.10	.15
Dillard	-.53	2.03	-.53	2.31	-.35	2.21
Federated Dept. Stores	-.63	3.86	-.66	5.18*	-.59	9.00*
Jamesway Corp.	+.59	.72	+1.52	5.43*	+.82	3.64
Marshall Field	+.00	.00	+.16	.12	+.05	.03
Mercantile Stores	-1.17	6.56*	-.60	1.75	-.74	5.57*
Outlet Co.	-.24	.33	+.06	.02	+.03	.01
Sears Roebuck	+.42	2.43	+.02	.00	-.10	.38
Vornado	-.44	.26	+.26	.11	+.25	.27
Wieboldt Stores	-.37	.34	-.01	.00	+.08	.04
Zayre Corp.	-.46	.44	-.01	.00	-.20	.27
Caldor's Inc.	-.38	.60	+.07	.02	-.16	.24
King's Dept. Stores	-.38	.65	-.40	.83	-.30	1.04
Rapid American	-.79	1.34	-.57	.90	-.29	.51

Table 39 (Continued)

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Walmart Stores	-.84	1.63	-.26	.19	-.81	4.17*
Albertsons	-.12	.13	+.06	.03	+.14	.36
Alterman	-.95	3.24	-.60	1.63	-.43	1.57
Circle K	-.36	.33	-.23	.19	-.04	.01
Dillon Cos.	-.61	3.53	-.38	1.61	-.35	3.01
Fairmont Foods	+.37	.62	+.18	.16	+.11	.12
Great A&P	+.74	1.93	+.97	4.42*	+.51	2.54
Laneco	-.60	.72	-.39	.36	-.31	.49
Lucky Stores	-.78	4.71*	-.59	3.27	-.60	9.96*
Niagra Frontier Systems	-.02	.00	-.41	.87	-.28	.79
Penn Traffic	+.77	4.35*	+.79	5.52*	+.53	4.82*
Petrolane	-.54	1.61	-.16	.17	-.28	1.19
Ruddick	-.32	.43	-.19	.21	-.28	1.01
Safeway Stores	-.29	1.04	-.46	3.63	-.29	2.70
Supermarkets General	-.48	.85	-.10	.04	-.40	1.50
Thriftimart	-.55	1.31	-.52	1.68	-.25	.81
Winn-Dixie Stores	-.76	4.38*	-.35	1.06	-.30	1.54
Belscot Retailers	-1.47	3.41	-.36	.23	-.60	1.43
Masters	-1.63	4.32*	-1.08	2.22	-1.37	8.92*
Lane Bryant	+.28	.28	+.88	3.40	+.71	4.58*
Levitz Furniture	-.39	.24	+.24	.11	-.50	1.31
RB Inds.	-.30	.12	+.87	1.26	+.34	.42
Carrols Development	+.45	.29	+.83	1.34	+.61	1.46
Churchs Fried Chicken	-.29	.20	-.21	.13	-.26	.39
Collins Foods International	-.15	.05	+.68	1.33	+.36	.99
Denny's	-1.18	4.86*	-1.02	5.40*	-.68	4.13
Marriott Corp.	+.11	.04	+.34	.50	+.18	.24

Table 40

Chow Test Statistics and Beta Changes--

SFAS 13 Supplemental Changes - Period 2

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Beatrice Foods	-.18	.40	-.19	.58	-.10	.29
International Multifoods	-.47	1.92	-.09	.09	-.23	1.24
Bartons Candy	-1.05	2.14	-.88	1.76	-.75	2.85
Heublein	-.93	4.23*	-.73	3.47	-.72	5.71*
CHB Foods	+.77	1.01	+.77	1.28	+.67	1.71
Atlantic Richfield	+.26	.65	+.19	.46	+.31	1.89
Stride Rite	-.50	1.54	-.41	1.29	-.22	.74
Huck Mfg.	+.58	.84	+.73	1.58	+.11	.94
Craig Corp.	-.96	1.53	-.29	.18	-.05	1.32
Macrodyne	+.16	.02	+.79	.67	+.60	.74
Conroy	-1.16	1.84	-.89	1.36	+.48	1.59
Delta Airlines	-.24	.38	.03	.01	+.05	.04
Scot Lad Foods	-.48	.87	-.12	.07	-.08	.06
Alexanders	-1.34	3.77	-.46	1.13	-.62	2.27
Allied Stores	-.63	3.15	-.11	.12	-.27	1.37
Ames Dept. Stores	-.20	.13	-.08	.03	-.05	.01
Associated Dry Goods	-.76	3.26	-.21	.28	-.24	.68
Carter Hawley, Hale	-.98	3.25	+.07	.02	-.30	.69
Crowley Milner	-.42	.99	-.24	.36	-.48	3.04
Dayton Hudson	-.27	.34	-.22	.29	.36	1.53
Dillard	-.49	1.53	-.39	1.11	-.32	1.56
Federated Dept. Stores	-.45	1.78	-.37	1.64	-.28	3.12
Jamesway Corp.	+.47	.40	1.31	3.46	+.74	2.43
Marshall Field	-1.14	5.86*	-.75	2.81	-.75	4.95
Outlet Co.	-.59	1.72	-.23	.33	-.16	.37
Sears Roebuck	-.47	2.80	-.03	.02	-.09	.24
Vornado	-.39	.21	+.58	.56	+.48	.95
Wieboldt Stores	-.93	2.12	-.53	.81	-.24	.36
Zayre Corp.	-.38	.28	+.22	.10	-.05	.01
Caldor's Inc.	-.14	.09	+.29	.39	+.01	.00
King's Dept. Stores	-.38	.58	-.26	.31	-.33	.49
Rapid American	-.91	1.68	-.49	.61	-.29	.44

Table 40 (Continued)

Company	SP INDEX Beta Change	SP INDEX Chow Statistic	VW INDEX Beta Change	VW INDEX Chow Statistic	EW INDEX Beta Change	EW INDEX Chow Statistic
Walmart Stores	-.55	.65	+.07	.01	-.48	1.29
Albertsons	+.36	.97	+.51	2.39	+.46	3.35
Alterman	-.21	.15	-.03	.00	+.14	.16
Circle K	-.36	.32	-.27	.25	-.05	.02
Dillon Cos.	-.65	3.42	-.31	.82	-.34	2.20
Fairmont Foods	+.50	.98	+.24	.28	+.22	.41
Great A&P	+1.04	3.15	+1.42	8.08*	+.86	5.97*
Laneco	-.17	.05	+.31	.20	+.04	.01
Lucky Stores	-.21	.29	+.01	.00	-.12	.29
Niagra Frontier Systems	+.14	.07	-.28	.35	-.27	.67
Penn Traffic	+.49	1.60	+.60	2.80	+.33	1.57
Petrolane	-.44	.93	-.09	.05	-.20	.47
Ruddick	-.38	.51	-.25	.25	-.38	1.23
Safeway Stores	+.09	.09	+.06	.05	-.04	.03
Supermarkets General	-.17	.10	+.20	.13	-.14	.14
Thriftimart	-.46	.92	-.34	.68	-.03	.01
Winn-Dixie Stores	-.94	8.10*	-.54	2.98	-.40	3.37
Belscot Retailers	-1.10	2.04	-.08	.01	-.38	.63
Masters	-1.04	1.86	-.59	.70	-.96	4.66*
Lane Bryant	+.07	.06	+.65	2.22	+.41	1.82
Levitz Furniture	+.01	.00	+.61	.84	-.19	.21
RB Inds.	+.99	1.42	+1.85	6.84*	+1.19	6.13*
Carrols Development	+.80	1.23	+.90	3.01	+.87	3.94
Churchs Fried Chicken	+.00	.00	-.02	.00	-.04	.06
Collins Food International	-.20	.10	+.45	.70	+.36	.57
Denny's	-1.12	4.58*	-1.13	6.99*	-.79	6.36*
Marriott Corp.	+.00	.00	+.03	.01	-.02	.00

Table 41

Chow Test Statistics and Beta Changes --

SFAS 13 Supplemental Firms - Period 3

	SP INDEX		VW INDEX		EW INDEX	
Company	Beta Change	Chow Statistic	Beta Change	Chow Statistic	Beta Change	Chow Statistic
Beatrice Foods	-.18	.37	-.19	.58	-.11	.30
International Multifoods	-.56	2.53	-.18	.30	.29	1.86
Bartons Candy	-.77	1.01	-.72	1.13	-.62	1.82
Heublein	-.86	3.33	-.71	3.16	-.72	5.54*
CHB Foods	+.73	.84	+.77	1.15	+.69	1.70
Atlantic Richfield	+.29	.72	+.13	.70	+.35	2.24
Stride Rite	-.47	1.29	-.40	1.12	-.20	.58
Huck Mfg.	+.71	1.22	+.77	1.71	+.44	1.13
Craig Corp.	-1.07	1.77	+.35	.26	-.59	1.51
Macrodyne	+.44	.15	+.97	.97	+.79	1.27
Conroy	-1.06	1.43	-.89	1.24	-.68	1.61
Delta Airlines	-.27	.41	-.06	.03	+.04	.03
Scot Lad Foods	-.44	.68	-.12	.07	-.06	.04
Alexanders	-1.16	2.66	-.59	.85	-.60	2.05
Allied Stores	-.49	1.90	-.01	.00	-.21	.82
Ames Dept. Stores	+.02	.00	+.05	.01	+.00	.00
Associated Dry Goods	-.62	2.04	-.08	.05	-.19	.39
Carter Hawley, Hale	-.87	2.39	+.17	.09	-.20	.31
Crowley Milner	-.23	.27	-.10	.06	-.39	1.84
Dayton Hudson	-.31	.35	-.24	.30	-.39	1.60
Dillard	-.51	1.54	-.43	1.27	-.34	1.64
Federated Dept. Stores	-.40	1.31	-.35	1.26	-.39	2.89
Jamesway Corp.	+.43	.29	+1.24	2.86	+.70	2.02
Marshall Field	+.31	.32	+.47	.96	+.32	.75
Mercantile Stores	-.98	3.98*	-.64	1.78	-.54	4.15*
Outlet Co.	-.46	1.00	-.15	.13	-.08	.10
Sears Roebuck	-.37	1.55	+.05	.04	-.05	.07
Vornado	-.17	.04	+.71	.80	+.60	1.39
Wieboldt Stores	-1.06	2.49	-.60	.98	-.25	.37
Zayre Corp.	-.30	.16	+.28	.116	-.02	.00
Caldor's Inc.	+.12	.06	+.49	1.04	+.16	.22
King's Dept. Stores	-.46	.75	-.30	.41	-.26	.41
Rapid American	-.95	1.87	-.48	.59	-.29	.47

Table 41 (Continued)

Company	SP INDEX Beta Change	SP INDEX Chow Statistic	VW INDEX Beta Change	VW INDEX Chow Statistic	EW INDEX Beta Change	EW INDEX Chow Statistic
Walmart Stores	-.48	.47	+.12	.04	-.43	1.04
Albertsons	+.35	.90	+.46	1.90	+.42	2.69
Alterman	-.22	.16	.11	.05	+.08	.05
Circle K	-.42	.38	-.33	.34	-.12	.08
Dillon Cos.	-.67	3.28	-.31	.77	-.33	1.90
Fairmont Foods	+.43	.70	+.14	.09	+.11	.11
Great A&P	+1.10	3.49	+1.47	8.39*	+.88	5.91*
Laneco	+.11	.02	+.47	.42	+.12	.06
Lucky Stores	-.10	.06	+.05	.03	-.10	.19
Niagra Frontier Systems	+.25	.22	-.22	.21	-.27	.57
Penn Traffic	+.47	1.34	+.57	2.37	+.31	1.36
Petrolane	-.40	.75	-.08	.03	-.20	.48
Ruddick	-.34	.35	-.24	.24	-.38	1.17
Safeway Stores	+.07	.05	+.02	.01	-.08	.15
Supermarkets General	-.16	.07	+.21	.13	-.13	.13
Thriftimart	-.39	.60	-.29	.49	+.01	.00
Winn-Dixie Stores	-.75	4.22*	-.35	1.08	-.33	1.79
Belscot Retailers	-1.58	4.62*	-.51	.49	-.67	1.87
Masters	-1.75	4.95*	-1.27	3.02	-1.53	11.24*
LaneBryant	+.53	.93	+1.06	4.93*	+.86	6.70*
Levitz Furniture	-.31	.16	+.27	.13	-.53	1.46
RB Inds.	-.37	.16	+.81	1.06	+.23	.20
Carrols Development	+.36	.18	+.78	1.09	+.62	1.39
Churchs Fried Chicken	-.20	.09	-.14	.06	-.20	.23
Collins Foods International	+.35	.25	+.28	3.12	+.64	3.20
Denny's	-1.23	4.94*	-1.07	5.47*	0.72	4.33*
Marriott Corp.	+.07	.02	+.32	.40	+.19	.26

Table 42

Summary of Chow Tests -- SFAS 13 Firms

INDEX	SAMPLE	PERIOD	NUMBER OF FIRMS	CHANGES IN BETA		STATISTICALLY SIGNIFICANT CHANGES IN BETA		
				POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	TOTAL
SP	Noncapitalizing	1	46	22	24	0	1	1
SP	Capitalizing	1	46	22	24	0	1	1
SP	Supplemental	1	60	18	42	1	9	10
SP	Noncapitalizing	2	46	21	25	0	2	2
SP	Capitalizing	2	46	15	31	0	1	1
SP	Supplemental	2	60	15	45	0	4	4
SP	Noncapitalizing	3	46	20	26	0	1	1
SP	Capitalizing	3	46	17	29	0	1	1
SP	Supplemental	3	60	19	41	0	5	5
VW	Noncapitalizing	1	46	35	11	3	1	4
VW	Capitalizing	1	46	29	17	0	0	0
VW	Supplemental	1	60	25	35	4	3	7
VW	Noncapitalizing	2	46	32	14	1	0	1
VW	Capitalizing	2	46	23	23	3	1	4
VW	Supplemental	2	60	25	35	2	1	3
VW	Noncapitalizing	3	46	29	17	3	1	4
VW	Capitalizing	3	46	21	25	1	0	1
VW	Supplemental	3	60	28	32	2	1	3
EW	Noncapitalizing	1	46	33	13	6	1	7
EW	Capitalizing	1	46	31	15	2	0	2
EW	Supplemental	1	60	19	41	3	9	12
EW	Noncapitalizing	2	46	32	14	4	1	5
EW	Capitalizing	2	46	26	20	1	1	2
EW	Supplemental	2	60	21	39	1	4	5
EW	Noncapitalizing	3	46	29	17	4	1	5
EW	Capitalzing	3	46	23	23	0	0	0
EW	Supplemental	3	60	23	37	2	4	6

Table 43

Summary of Wilcoxon Matched-Pairs Signed-Ranks Test

for Residuals Estimated with Dimson Betas

ASR 147

Wilcoxon T Statistics (Significance Level)

	SP		VW		EW	
Critical Event	40 day pre & post	20 day post only	40 day pre & post	20 day post only	40 day pre & post	20 day post only
Proposal Announcement (June 6, 1973)	420(.45)	115(.35)	423(.43)	115(.35)	417(.46)	116(.34)
Proposal Adopted (October 5, 1973)	394(.59)	102(.55)	397(.57)	102(.55)	405(.53)	102(.55)

SFAS 13

First Exposure Draft (August 26, 1975)	486(.19)	127(.21)	488(.15)	129(.19)	500(.11)	130(.18)
Second Exposure Draft (July 22, 1976)	437(.36)	103(.53)	438(.35)	103(.53)	450(.30)	107(.47)
SFAS 13 Announcement (November 30, 1976)	315(.90)	73(.88)	298(.90)	73(.88)	326(.87)	75(.87)

Table 44

OLS and Dimson Estimates of Beta

Portfolio	Estimation Period	SP $\hat{\beta}$OLS	SP $\hat{\beta}$Dimson	SP Ratio	VW $\hat{\beta}$OLS	VW $\hat{\beta}$Dimson	VW Ratio	EW $\hat{\beta}$OLS	EW $\hat{\beta}$Dimson	EW Ratio
ASR 147 Noncapitalizing	5/1/72 - 4/30/73	.806	1.167	1.45	.851	1.113	1.31	.965	1.018	1.05
ASR 147 Capitalizing	5/1/72 - 4/30/73	.790	1.283	1.62	.824	1.231	1.49	.927	1.150	1.24
SFAS 13 Noncapitalizing	6/3/74 - 7/28/75	.720	1.219	1.69	.781	1.262	1.62	1.082	1.100	1.02
SFAS 13 Noncapitalizing	6/3/74 - 8/30/76	.758	1.273	1.68	.818	1.322	1.62	1.085	1.075	.99
SFAS 13 Capitalizing	6/3/74 - 7/28/75	.660	1.116	1.69	.709	1.153	1.63	.957	.966	1.01
SFAS 13 Capitalizing	6/3/74 - 8/30/76	.694	1.236	1.78	.746	1.288	1.73	.995	1.042	1.05